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October 1995

National Potato Germplasm Evaluation and Enhancement Report, 1994

Sixty-Fifth Annual Report
by Cooperators

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National Potato Germplasm Evaluation and Enhancement Report, 1994

Sixty-Fifth Annual Report by Cooperators

Edited by
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Abstract

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**United States Department of Agriculture
Beltsville Agricultural Research Center
Beltsville, Maryland and Presque Isle, Maine**

K.G. Haynes and R.W. Goth

Objectives: The USDA potato breeding program at Beltsville has four main objectives: (1) to develop improved pest-resistant germplasm and varieties, with emphasis on late blight, early blight, scab, Verticillium wilt, bacterial wilt, and corky ring spot; (2) to develop improved germplasm and varieties for processing directly out of cold storage; (3) to enhance germplasm for specific characteristics relating to pest resistance, yield, environmental stress, human nutrition and consumer acceptance; and (4) to develop statistical genetic models for some of the new breeding strategies.

Breeding

BARC: Hybridizations in the greenhouse at BARC in early 1994 were made among tetraploid clonal material possessing resistance to corky ring spot, late blight, scab, Verticillium wilt and soft rot; high quality; processing and fresh market potential; white, russet, red and purple skin; yellow flesh; and adaptability to various ecological test zones. Four hundred seventy-four tetraploid crosses were successful. Crosses among diploid clonal material emphasized yellow-flesh, longer dormancy and resistance to common scab. Two hundred and seven diploid crosses were successful. Interploidy hybridizations were made between the tetraploid and diploid populations for yield, yellow-flesh, and resistance to soft rot. Thirty-nine 4x-2x crosses and eight 2x-4x were successful.

Germplasm Enhancement and Varietal Development

Chapman Farm: Of the approximately 26,700 seedling tubers planted, 1,307 were saved for replanting in 1995. Of these, 315 were for a study on early blight resistance with Dr. Barbara Christ, Penn State; and 121 were 4x-2x hybrids with potential resistance to soft rot, scab or Colorado potato beetle. The remaining selected clones were saved for varietal development.

Due to intense Colorado potato beetle pressure, no

selections were made in the 12-hill and 40-hill plots. Seed from these plots was saved for evaluation in 1995.

Of the 94 clones evaluated in 60-hill plots, 68 were saved. Of the 87 clones evaluated in 80-hill plots, 47 were saved. Of the 28 clones evaluated in 100-hill plots, 13 were saved. Of the 22 clones evaluated in 150-hill plots, 9 were saved. Of the 32 clones evaluated in 200-hill plots, 14 were saved.

All index materials planted on Chapman were done in tuber units with six feet between rows and five feet between units to continue the virus/viroid indexing program.

Seed tubers of promising clones and standard varieties were distributed for adaptability and/or processing trials and/or preliminary evaluation to Maine, New York (upstate and Long Island), New Jersey, Pennsylvania, Virginia, North Carolina, Florida, Michigan, Ohio, California, Colorado, Texas and Georgia.

Disease Evaluations on Aroostook State Farm

Late Blight: Eighty clones were evaluated for late blight resistance and processing quality (Table 1). The experimental design was a randomized complete block with two replications. Plots were four-hills and not inoculated. These were planted on June 13 and harvested October 6. Late blight symptoms were recorded on September 20 on a 1-9 scale (1=no blight; ...9=dead). Tubers were graded, specific gravity determined, and a five tuber sample was placed in 50°F storage for chipping on December 21. Potato chips were made by taking two 1/16-inch slices from the middle of each tuber. Slices were rinsed in water and placed on paper towels to remove excess moisture. Chips were fried at 340°F in Primex vegetable shortening until bubbling ceased. Sprout length was also recorded on December 21 on the tuber chipping sample.

Late blight resistance in B0718-3, B0750-3, B0752-1, B0767-1F, B0767-2, B0793-2, B0795-1, B0801-1, B0801-2, B0807-2, B0818-2 and PI383470B continues to look promising. Within this group, hollow heart problems were noted in B0801-1 and B0807-2. Growth cracks were observed in B0767-

1F, B0767-2, and B0818-2. Yields were low in B0750-3, B0752-1, B0767-1F, and B0793-2. None of the late blight resistant selections chipped satisfactorily. The best combinations of late blight resistance and yield were observed in B0718-3, B0767-2, and PI383470B.

Verticillium wilt: Seven clones were evaluated for Verticillium wilt symptoms and the effect of *Verticillium* on yield and specific gravity (Table 2). The experimental design was a split-plot with three replications with clones as the whole plot factor and inoculation or non-inoculation with *Verticillium* as the sub-plot factor. Each whole plot consisted of 10 rows of 10 hills for each clone divided into five rows that were non-inoculated and five rows that were inoculated at planting with a combination of *Verticillium albo-atrum* and *V. dahliae*. The plots were planted on June 15 and harvested October 6. Wilt symptoms were recorded on August 3 on a 1-10 scale (1=no wilt,...10=dead). Data from the middle three rows of each sub-plot were analyzed.

There were significant differences among clones for wilting. Abnaki, B0169-56, Reddale and Russette were resistant. B0178-35, B0233-1 and Superior were susceptible.

There was a significant yield reduction in the inoculated plots. The clone x inoculation interaction was also significant. The smallest reductions in yield occurred in the resistant clones, and the largest yield reductions occurred in the susceptible clones.

In the Verticillium wilt resistant clones there was little effect of inoculation on specific gravity. However, there was a substantial decrease in specific gravity in two of the inoculated Verticillium wilt susceptible clones.

BARC Table 1. Average late blight on September 20, 1994, total yield, yield of U.S. No. 1, specific gravity, chip and sprout length for potato clones evaluated in the late blight disease plot on Aroostook State Farm, Presque Isle, Maine.

Pedigree	Late Blight ¹	Yield ²			S.G. ³	Chip ⁴	Sprout ⁵
		Total	U.S. No. 1				
Atzimba	6.0	6.6	2.9	73	8.4	S	
B0300-6	4.5	9.3	8.5	74	9.2	O	
B0690-4	4.5	10.8	9.6	78	10.0	S	
B0690-5	4.5	9.3	7.5	83	8.6	S	
B0690-6	4.5	9.0	8.5	81	10.0	O	
B0690-7	5.0	5.8	5.5	74	9.0	O	
B0690-9	5.9	5.5	4.2	82	9.9	S	
B0692-1	4.4	11.4	10.4	70	9.2	S	
B0692-1F	5.0	8.1	7.3	74	9.9	S	
B0692-3	4.5	10.8	10.0	67	9.1	S	
B0692-4	4.3	10.3	9.5	86	7.7	L	
B0702-1	7.0	4.9	4.7	71	9.1	O	
B0702-1F	5.0	9.3	8.2	66	8.8	S	
B0709-1F	4.4	12.2	10.2	76	10.0	S	
B0711-1	4.0	5.9	5.5	67	8.8	S	
B0714-2	4.8	5.1	3.3	77	8.8	O	
B0718-3	3.5	8.9	8.8	68	9.5	O	
B0718-7	4.5	7.0	6.6	65	7.7	S	
B0718-8	5.8	8.7	8.0	76	8.2	S	
B0718-9	5.0	10.3	8.4	65	7.6	M	
B0725-1	5.0	10.8	9.5	71	10.0	S	
B0727-1	4.0	10.7	10.3	93	9.2	O	
B0727-1F	6.8	9.0	7.8	70	8.3	S	
B0727-2	4.5	8.1	8.0	69	9.1	O	
B0727-2F	5.0	8.6	8.0	57	9.4	S	
B0727-3	5.0	8.1	7.4	69	8.5	S	
B0731-1F	5.5	4.2	2.6	78	8.0	M	
B0731-2F	4.2	10.2	10.1	73	8.9	S	
B0736-2	4.8	7.4	7.0	76	9.4	O	
B0738-2	4.4	8.2	6.2	70	9.8	O	

BARC Table 1. (Continued)

Pedigree	Late Blight ¹	Yield ²		S.G. ³	Chip ⁴	Sprout ⁵
		Total	U.S. No. 1			
B0744-1F	6.0	5.7	3.9	70	9.0	S
B0746-1F	5.0	10.8	10.1	85	9.0	S
B0747-2	4.5	8.8	7.9	64	10.0	S
B0747-3	4.5	8.7	7.8	75	9.3	O
B0748-1F	4.5	6.1	3.2	82	8.9	O
B0749-1	5.0	10.1	9.2	90	9.2	O
B0749-1F	4.5	7.7	4.9	82	9.0	S
B0749-2F	6.4	4.9	4.5	76	9.3	S
B0750-1	4.0	8.7	7.4	84	8.6	O
B0750-2	4.1	5.9	2.9	71	8.6	O
B0750-3	3.2	4.6	1.5	76	8.7	S
B0752-1	3.6	7.1	4.1	80	8.7	O
B0767-1	4.5	7.3	6.1	76	9.3	O
B0767-1F	3.5	6.4	4.9	72	10.0	O
B0767-2	3.0	8.6	7.4	71	9.8	S
B0767-2F	4.0	8.0	6.9	71	10.0	S
B0774-1	4.1	6.5	5.1	65	10.0	S
B0788-1	4.5	5.6	2.6	87	8.9	S
B0793-1	6.8	6.4	5.4	87	9.0	O
B0793-1F	4.0	8.4	4.9	67	10.0	S
B0793-2	3.9	5.8	4.7	77	9.6	O
B0793-2F	5.0	10.1	7.8	63	10.0	S
B0793-3	5.0	4.8	3.5	63	9.7	O
B0793-4	4.5	5.7	3.7	70	10.0	S
B0793-5	5.0	7.7	6.6	72	9.5	S
B0793-6	5.0	8.1	7.2	76	10.0	S
B0795-1	3.8	9.1	8.4	59	10.0	S
B0795-1F	4.0	10.7	10.2	61	10.0	S
B0801-1	3.6	7.3	6.0	68	9.7	O
B0801-1F	4.5	10.0	7.0	76	9.7	S
B0801-2	3.6	6.8	5.4	67	10.0	O

BARC Table 1. (Continued)

Pedigree	Late Blight ¹	Yield ²		S.G. ³	Chip ⁴	Sprout ⁵
		Total	U.S. No. 1			
B0801-2F	5.0	9.3	7.9	74	10.0	S
B0807-2	3.5	8.6	7.4	62	9.9	S
B0807-3	4.5	6.8	6.7	65	8.6	S
B0818-1	4.0	8.3	6.8	73	9.5	S
B0818-2	3.9	9.2	8.6	68	10.0	S
B1209-7	7.3	5.6	5.0	72	9.5	S
B1210-1	6.5	14.0	13.5	82	8.6	M
B1210-11	4.6	9.5	9.2	71	9.8	S
B1210-12	9.0	6.3	4.5	81	8.2	S
B1210-16	8.9	6.7	6.0	80	8.0	M
B1210-6	5.1	13.2	12.5	76	8.0	S
Green Mountain	7.6	5.8	5.5	76	9.5	O
Kennebec	8.8	7.6	7.3	74	7.4	O
PI383470B	3.3	9.3	8.7	66	8.6	O
12823	9.0	8.6	7.5	77	8.2	S
13540	9.0	7.1	5.9	82	6.9	O
15620	9.0	7.2	5.4	77	7.4	S
Itasca	8.5	8.2	7.4	85	9.0	S
Red Ruby	9.0	8.3	8.2	68	10.0	O

¹ Late blight read on 1-9 scale - 1=no blight ... 9=dead

² Yield in pounds per 4 hill plot

³ 1.0 omitted

⁴ Chips 1-7=satisfactory

⁵ Sprout length: O=no sprouts; S=<0.5" sprouts; M=0.5-1.5" sprouts; L=1.5-2.5" sprouts.

BARC Table 2. Average wilt symptoms, yield per hill, and specific gravity for seven clones evaluated for Verticillium wilt in Presque Isle, Maine in 1994.

Clone	Inoc. ¹	Wilt ²	Yield/Hill ³	S.G. ⁴
Abnaki	Yes	2.3	1.4	74
Abnaki	No	1.2	1.9	74
B0169-56	Yes	2.9	1.7	85
B0169-56	No	1.2	1.9	85
B0178-35	Yes	6.2	1.0	88
B0178-35	No	1.1	1.8	90
B0233-1	Yes	6.5	0.7	73
B0233-1	No	1.3	1.6	80
Reddale	Yes	2.4	1.9	68
Reddale	No	1.1	2.2	71
Russette	Yes	3.0	1.4	90
Russette	No	1.0	1.6	93
Superior	Yes	8.6	0.5	70
Superior	No	1.7	1.3	84

¹ Sub-plots were either non-inoculated or inoculated with a combination of *V. albo-atrum* and *V. dahliae* at planting.

² Verticillium wilt symptoms read on August 31 - 1=no wilt...10=dead.

³ In pounds.

⁴ 1.0 omitted.

**United States Department of Agriculture
Agricultural Research Service
Potato Genetics and Enhancement Project
Madison, Wisconsin**

Robert E. Hanneman, Jr.

Introduction

The USDA, ARS potato genetics and enhancement project is responsible for the exploitation of wild and cultivated potato species germplasm for introgression of selected traits such as extreme pest resistance, high solids, direct chipping and high yield into Tuberosum background and to share these materials with cooperating breeding and enhancement programs, and to study inter- and intra-specific crossing barriers and chromosome pairing relationships among wild and cultivated species. This report will deal principally with the enhancement aspect of this program.

Evaluation and Incorporation of New Sources of Species Germplasm that Chip Directly from Storage

The ability of potato cultivars to chip directly from storage is of particular interest, especially with the pending loss of sprout inhibitors. Only a few cultivars are able to chip directly from 45 degree storage, and none from colder than that without reconditioning. This study has been directed at identifying potential new sources of germplasm that are able to chip acceptably from temperatures of less than 40 degrees. To do this, we have turned to evaluating the wild and cultivated species as potential sources for this trait.

In the process of this evaluation, 828 accessions (PIs) representing 98 species have been screened. Twenty-five plants of each PI were grown in trays and harvested in the fall. They were stored at 34-36 degrees in a walk-in cooler until chipped. These were then chipped at three and six months after harvest. Chipping was done by making thin slices of each tuber in a family or if the tuber was very small, by slicing it in half. The cut pieces were rinsed in tap water and fried at 375 degrees in a commercial fryer. Chip colors were scored using a Potato Chip Institute International color chart with a scale of 1 (light) to 10 (dark), with 1-3 being best, 4-5 acceptable, 6-7 marginal, and 8-10 unacceptable.

As a result of this initial evaluation, the following species were identified which had some plants with chip scores of 4 or less:

2x(1EBN): *S. capsicibaccatum*, *S. pinnatisectum*;
2x(2EBN): *S. medians*, *S. microdontum* ssp.
gigantophyllum, *S. multidissectum*, *S.*
multiinterruptum, *S. neorossi*, *S. okadae*, *S.*
pampasense, Group Phureja, *S. raphanifolium*, *S.*

sanctae-rosae, *S. sogarandinum*, *S. sparsipilum*, *S.*
spgazzinii, Group *Stenotomum-goniocalyx*, *S.*
tarijense, *S. toralapanum*;
4x(2EBN): *S. acaule* ssp *acaule*, *S. papita*, *S.*
stoloniferum ;
4x(4EBN): Group Andigena, and
6x(4EBN): *S. brachycarpum*, *S. oplocense*, and *S.*
schenckii.

In addition the following PI were selected as having the better chip profiles as families, having a higher percentage of progeny with acceptable chip scores:

<i>S. capsicibaccatum</i>	PI 473458
<i>S. medians</i>	PI 283081
<i>S. okadae</i>	PI 498063
<i>S. pinnatisectum</i>	PI 186553
<i>S. raphanifolium</i>	PI 458384
<i>S. sogarandinum</i>	PI 365360
Gp. <i>Stenotomum</i>	PI 230512
<i>S. tarijense</i>	PI 473239
Gp. Andigena	PI 243368

Approximately 270 of these PIs have been rescreened to confirm the initial results, and 127 were screened intensely in an effort to identify specific clones with good chipping characteristics. Based on data summarized over two years, the following species seem to be the most promising sources: *S. medians*, *S. okadae*, *S. pinnatisectum*, *S. raphanifolium* and *S. sogarandinum*. The following PIs have been selected as promising based on two years data:

<i>S. capsicibaccatum</i>	PI 473458
<i>S. huancabambense</i>	PI 498244
<i>S. medians</i>	PI 283081
"	PI 310994
"	PI 320261
"	PI 473496
<i>S. multiinterruptum</i>	PI 365337
<i>S. okadae</i>	PI 498063
"	PI 498064
"	PI 498065
<i>S. oxycarpum</i>	PI 230479
<i>S. pinnatisectum</i>	PI 186553
"	PI 275235
<i>S. raphanifolium</i>	PI 265862
"	PI 296126
"	PI 310998
"	PI 458384
"	PI 458408
"	PI 473466
"	PI 473467
<i>S. sogarandinum</i>	PI 230510
"	PI 365360
<i>S. sparsipilum</i>	PI 458386
"	PI 473385
Gp. <i>Stenotomum-gon</i>	PI 195214

<i>S. suurense</i>	PI 473506
<i>S. tarijense</i>	PI 458395
"	PI 473238
<i>S. toralapanum</i>	PI 472805

Among the families selected for evaluation the second year based on a chip score of 7 or less, 4.5% of the seedlings had chip scores of 4 or less, 21.6% had scores of 6 or less, while 78.4% had chip scores of over 7 or more. Among those families having chip scores of 6 or less in the previous year, 18.9% of the seedlings had chip scores of 4 or less, 48.8% had chip scores of 6 or less, and 51.2% had chip scores of 7 or greater. Selection of families for chipping ability based on prior performance seems effective.

The best clones and families have been used in crosses to haploids and cultivars in an effort to incorporate cold chipping ability into cultivated background for further use in breeding and genetic studies.

Progress on Enhancement

The national cooperative enhancement effort continues to develop and provide materials to most breeding and enhancement programs in the U.S. as it strives to fill a national need by serving as a bridge between the genebank and the breeding community, making new materials available to them that incorporate species germplasm into cultivated background. Most of the resources of the USDA, ARS Potato Genetics and Enhancement Project are expended on this effort. The incorporation of wild species germplasm through the use of haploids, 2n gametes and Endosperm Balance Number is emphasized.

During this past season, 17,249 first year seedling transplants were grown in the field, representing 361 families, which were the result of crosses to incorporate direct chipping ability, resistance to aphids, blackleg, *chitwoodii* nematode, Colorado potato beetle, early blight, leafroll virus, *Verticillium* wilt, multiple pests, and also included sib-matings to aid in exposing recessive traits. In addition, 8,162 second year materials were grown for selection. These represented 389 families. All advanced selections were screened for the presence of 2n pollen and some for 2n eggs. Some very promising lines were identified, as were some early materials.

An announcement of materials available for distribution was sent out to all cooperators in late summer, and samples were picked up at harvest to fill those requests. The samples were sent to ten state and federal cooperators a few weeks after harvest was completed. A request was made for any evaluation information or observations that might have been obtained on materials the cooperators had received previously from the program. Cooperators are expected to evaluate the materials for problems they are

dealing with and share that information and selected materials with this program. Materials are provided on the basis that they will be used for breeding purposes, but not for research, in keeping with this enhancement program's purpose of developing parental materials for use in state, federal and commercial breeding programs. The program is open to cooperating on research.

Acknowledgements

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NORTH CENTRAL REGIONAL POTATO TRIALS

Gary A. Secor, Professor, Plant Pathology Dept.
and Bryce Farnsworth, Research Specialist, Plant
Sciences Dept., North Dakota State University
and Cooperators

Cooperators:

Alberta, Mr. Clive Schaupmeyer; Manitoba, Mr. Brian Rex; Ontario, Dr. S.T. Ali-Khan; Indiana, Vacant; Iowa, Dr. Bill Summers; Louisiana, Dr. William Young; Michigan, Dr. Richard Chase and Dr. Dave Douches; Minnesota, Dr. Florian Lauer; Nebraska, Dr. Alexander D. Pavlista; Ohio, Dr. Richard Hassell; South Dakota, Dr. Paul Prashar; Wisconsin, Dr. Christian Thill. Dr. Paul Prashar has retired and a new cooperator has yet to be named. The cooperator position at Indiana is vacant, but may be filled by planting time. Technical assistance by Michael Schwalbe in North Dakota is also appreciated.

This year marked the 44th year the North Central Regional Trials have been conducted. There are 10 states and three provinces in the trial.

Cultivars Recently Released:

In 1994, Minnesota released two cultivars: Red Ruby (Selection No. MN 13035), whose parentage was Bison x MN 11.76-1 and Itasca (Selection No. MN12567), whose parentage was MN304.72-10 x ND58-3.

Cooperating States and Provinces:

STATE OR PROVINCE	DATE PLANTED	DATE HARVESTED	TOTAL DAYS		I/N ¹
			TO	HARVEST	
Manitoba	5/10	9/19	132		I
Ontario	No Trial		--		
Alberta	5/25	10/20	148		I
Indiana	No Trial		--		
Iowa	4/21	8/12	113		I
Louisiana	No Trial		--		
Michigan	5/9	9/29	143		I
Minnesota	4/20	9/1	134		I
Nebraska	5/19	9/24	126		I
North Dak	5/17	9/23	127		N
Ohio	5/18	9/22	127		N
South Dak	5/7	9/4	120		N
Wisconsin	4/29	9/16	140		I

¹ I - Irrigated; N = Non-irrigated

Environmental Conditions: Soil type ranged from clay loam to sand; however, most trials were grown on lighter sandy loam. Some trials were irrigated.

Cultural Practices: Fertilizers, insecticides, herbicides, fungicides and vine killers were all based on local conditions. Some of the insecticides and fungicides used were TOPS2.5D, Bravo, Guthion, Pencap M, Thiodan, Ridomil, Furadan, Dithane M-45, Sevin, Thimet, Pounce, Dithane M-22, Phorate, Imidan, Monitor, Cygon, Penncozeb, Disyston, Asana. Herbicides used were Sencor, Dual, Poast, Eptam, Prowl, Turbo. Vine Killers used were Diquat, Reglone and mechanical.

Weather Conditions: The weather was relatively cool and wet in the northern tier of states. The trial to Ontario was frozen enroute and not planted. Vacancies at Indiana and Louisiana prevented completion of the trial at these locations. Yields were generally good in 1994 due to adequate rain. All but three trials (ND, OH and SD) were irrigated. Late blight was present in some growing areas but did not affect trial results.

Entries: Entries were received from Minnesota, Wisconsin and North Dakota. Michigan submitted two entries inherited from the closed Purdue University potato breeding program. Check varieties supplied by North Dakota were Norchip, Dark Red Norland, Russet Norkotah, Russet Burbank and Red Pontiac.

Total and US No. 1 Yield: In total yield, MN15220 and Red Pontiac had the highest average yield and U.S. No. 1 yield. Other high yielding entries were MN12823, ND2417-6 and W1149. P84-9-8 was the lowest yielding entry. Minnesota and Manitoba produced the highest yields (North Central Regional Trial Tables 1 and 2).

Percent U.S. No. 1: P84-9-8 and Russet Burbank had the lowest percent US No. 1 and W1149 the highest. All other entries ranged from 75% to 87% (North Central Regional Trial Table 3).

Maturity: Norland was the earliest maturing entry while Russet Burbank was the latest maturing (North Central Regional Trial Table 4).

Percent Total Solids: As shown in North Central Regional Trial Table 5, seven entries produced solids of greater than 20%; three were 21 % or greater. W1149 had the highest solids at 21.9%. MN15220, Red Pontiac and Norland produced the lowest total solids.

Scab Reaction: Scab reactions of the entries can be seen in North Central Regional Trial Table 6. Scab was minimal in most sites, except MI, MN and NE.

Summary of Grade Defects: Grade defects are found in North Central Regional Trial Table 7. None of the entries were unusually susceptible to external or internal defects. Freedom from external defects ranged from 60.2 - 87.4%, while freedom from internal defects ranged from 82.1 - 97.5%. Scab will be discontinued as an external defect in 1995.

Chip Color: Chip color is found in North Central Regional Trial Table 8 and is reported either in Agtron or PCII Color Chart. Only eight sites reported chip color. Table 9 shows chip results from warm, cold and reconditioned trials of entries at one location.

Overall Merit Ratings: Merit ratings are reported in Table 10. The following summary shows only the top five entries and also indicates the ratings for these entries over the past three years.

Total Points			
Selection	1992	1993	1994
1. ND2417-6	NE*	17	23
2. ND2471-8	NE	17	23
3. Minn. 12823	25	NE	21.5
4. W1149	NE	NE	16
5. Minn. 13540	NE	7	14.5

*Not Entered

North Central Regional Trial Table 1. Total Yield (Cwt./Acre) - 1994.

Cultivar or Selection	Irrigated							Non-Irrigated		
	Alb.	Man.	IA	MI	MN	NE	WI	ND	OH	SD Ave.
Norchip	297	361	242	361	470	499	316	137	343	255 245
Dark Red Norland	243	377	236	325	460	354	349	158	277	137 191
Red Pontiac	302	584	375	612	636	626	500	222	392	311 308
Russet Burbank	196	468	263	397	552	327	355	--	169	263 216
Russet Norkotah	316	388	259	322	449	387	310	203	318	214 245
Minn. 12823	240	474	248	428	587	577	454	207	274	276 252
Minn. 13540	269	378	282	384	587	527	383	--	299	132 216
Minn. 15220	323	573	334	535	707	750	544	259	354	187 267
ND2417-6	327	483	353	367	569	480	359	185	410	250 282
ND2471-8	301	476	275	312	446	383	359	233	291	210 245
P83-11-5	--	--	--	--	337	246	220	118	233	-- 176
P84-9-8	--	--	--	--	347	203	229	97	113	-- 105
W1099Russ	184	426	315	330	462	382	367	--	338	169 254
W1100R	215	381	323	407	588	455	328	158	329	206 231
W1149	229	621	237	520	583	463	281	199	268	265 244
Average	247	461	288	408	519	444	357	181	294	221

North Central Regional Trial Table 2. US No. 1 Yield (Cwt/Acre) - 1994.

Cultivar or Selection	Alb.	Man.	IA	MI	MN	NE	ND	OH	SD	WI	Ave.
Norchip	213	298	185	259	400	486	80	257	231	265	244
Dark Red Norland	165	336	196	253	375	349	126	252	119	300	247
Red Pontiac	243	547	289	512	578	617	176	345	294	433	403
Russet Burbank	86	404	37	228	485	313	--	132	218	278	242
Russet Norkotah	238	337	191	201	393	362	158	319	187	251	264
Minn. 12823	188	430	216	368	548	556	170	225	263	376	334
Minn. 13540	190	340	207	297	548	506	--	254	119	345	312
Minn. 15220	250	500	173	424	667	733	198	276	184	459	386
ND2417-6	238	423	301	275	504	463	134	324	219	279	316
ND2471-8	253	443	245	236	399	377	213	256	194	332	295
P83-11-5	--	--	--	--	252	238	84	198	--	179	190
P84-9-8	--	--	--	--	261	191	59	77	--	191	156
W1099Russ	80	364	175	243	409	378	--	281	146	321	266
W1100R	139	298	223	296	460	436	98	276	181	260	267
W1149	194	595	216	467	559	441	156	266	255	265	341
Average	191	409	204	312	456	430	138	249	201	302	

North Central Regional Trial Table 3. Average Percent US No. 1 (over 2" diam.) - 1994.

Cultivar or Selection	Alb.	Man.	IA	MI	MN	NE	ND	OH	SD	WI	Ave.
Norchip	72	83	76	72	85	97	58	75	91	84	79
Dark Red Norland	68	89	83	78	81	99	80	91	87	86	84
Red Pontiac	80	94	77	84	91	99	79	88	94	87	87
Russet Burbank	44	86	14	57	88	96	61	78	83	78	69
Russet Norkotah	76	87	74	62	87	94	78	90	87	81	82
Minn. 12823	79	91	87	86	93	96	82	82	95	83	87
Minn. 13540	71	90	73	77	93	96	77	85	90	90	76
Minn. 15220	77	87	52	79	94	98	77	78	98	84	82
ND2417-6	73	88	85	75	89	96	72	79	88	78	82
ND2471-8	84	93	89	75	89	98	91	88	92	92	82
P83-11-5	--	--	--	--	75	97	71	85	--	81	82
P84-9-8	--	--	--	--	75	94	61	68	--	83	76
W1099Russ	44	85	56	74	89	99	66	83	86	87	77
W1100R	65	78	69	73	78	96	62	84	88	79	77
W1149	85	96	91	90	96	95	78	93	96	94	91
Average	71	82	71	76	87	97	73	83	90	85	

North Central Regional Trial Table 4. Maturity Classification^{1/} - 1994.

Cultivar or Selection	IA	MI	MN	ND	OH	SD	Ave.
Norchip	2.0	2.0	2.5	2.3	2.5	2.0	2.2
Dark Red Norland	1.0	1.0	1.0	1.3	1.0	1.0	1.1
Red Pontiac	3.0	4.0	3.8	3.3	4.0	4.0	3.7
Russet Burbank	5.0	4.0	4.8	3.8	5.0	5.0	4.6
Russet Norkotah	3.0	2.0	1.5	2.3	2.5	3.0	2.4
Minn. 12823	4.0	3.5	2.3	4.3	--	4.0	3.6
Minn. 13540	4.0	4.0	2.5	2.3	3.5	4.0	3.4
Minn. 15220	4.0	3.0	3.3	4.0	4.0	4.0	3.7
ND2417-6	3.0	3.0	2.5	2.3	4.0	3.0	3.0
ND2471-8	2.0	2.0	3.3	1.8	3.0	2.0	2.4
P83-11-5	--	--	2.5	2.3	3.0	--	2.6
P84-9-8	--	--	3.3	2.0	3.0	--	2.8
W1099Russ	4.0	2.5	2.0	1.8	3.0	4.0	2.9
W1100R	5.0	2.0	1.5	1.3	1.0	4.0	2.5
W1149	4.0	5.0	5.8	5.0	3.0	3.0	4.3
Average	3.4	2.9	2.8	2.7	3.0	3.3	

- ^{1/}
- | | |
|--|--|
| 1. Very Early - Irish Cobbler Maturity | 4. Late - Katahdin Maturity |
| 2. Early - Norland Maturity | 5. Very Late - Russet Burbank Maturity |
| 3. Medium - Red Pontiac Maturity | |

North Central Regional Trial Table 5. Percent Total Solids - 1994.

Cultivar or Selection	Alb.	Man.	IA	MI	MN	NE	ND	OH	SD	WI	Ave.
Norchip	24.0	22.2	17.7	20.1	18.6	23.0	19.9	20.0	21.1	19.9	20.7
Dark Red Norland	21.5	19.2	14.5	15.6	16.2	19.0	16.7	16.0	15.7	15.0	16.9
Red Pontiac	20.5	19.5	14.3	17.1	17.3	21.0	18.0	17.9	16.6	15.2	17.7
Russet Burbank	23.0	21.9	17.7	20.5	21.4	23.0	20.3	20.4	20.8	20.5	21.0
Russet Norkotah	21.5	20.5	16.1	18.2	19.0	20.0	19.2	20.2	18.6	17.3	19.1
Minn. 13540	24.1	21.5	15.0	17.5	18.6	22.0	19.4	17.7	16.9	18.8	19.2
Minn. 12823	23.8	21.8	18.5	19.2	20.9	22.0	19.2	19.0	18.8	20.1	20.3
Minn. 15220	20.8	19.4	15.3	16.9	16.0	19.0	16.9	16.6	17.6	16.7	16.0
ND2417-6	23.8	22.5	16.9	19.2	20.3	19.0	19.9	19.4	18.6	18.6	19.8
ND2471-8	25.8	24.0	18.0	20.3	20.9	25.0	21.8	21.1	16.4	19.9	21.3
W1099Russ	23.5	21.0	15.0	17.7	18.0	22.0	18.2	16.6	19.6	17.5	18.9
W1100R	21.5	20.3	14.4	16.5	17.5	20.0	17.3	17.1	16.8	17.1	17.8
W1149	24.0	23.6	18.2	22.9	24.0	25.0	20.7	21.7	16.8	22.2	21.9
P83-11-5	--	--	--	--	20.9	23.0	20.9	20.2	--	20.1	21.0
P84-9-8	--	--	--	--	19.7	24.0	22.2	19.8	--	19.0	20.9
Average	22.9	21.3	16.3	18.6	19.3	21.8	19.4	18.9	18.0	18.5	

North Central Regional Trial Table 6. Scab Reaction Report. Most Representative Scab (Area Type)^{1/} - 1994.

Cultivar or Selection	Alb.	Man.	IA	MI ^{2/}	MN	NE	ND	OH	SD	WI
Norchip	0	0	T-1	1.5	--	1-4	T-1	1-2	0	1-4
Dark Red Norland	0	1-1	T-1	2	2-1	T-5	T-1	1-1	0	T-1
Red Pontiac	0	1-1	T-1	5	3-3	4-5	T-1	1-1	0	3-5
Russet Burbank	0	0	0-0	2	--	1-4	0-0	1-2	0	0
Russet Norkotah	0	1-1	T-3	1.5	--	2-5	0-0	0	0	1-4
Minn. 12823	0	T-1	T-2	2.5	--	1-4	T-1	1-1	0	T-1
Minn. 13540	0	T-1	T-2	2	1-1	1-3	T-1	1-1	0	T-1
Minn. 15220	0	T-1	T-1	1	1-1	1-4	T-1	1-1	0	1-4
ND2417-6	0	1-1	T-1	3.5	1-2	1-4	T-1	1-1	0	1-5
ND2471-8	0	T-4	T-1	4	4-4	1-5	T-1	1-1	0	2-4
P83-11-5	--	--	--	--	1-2	1-4	T-1	1-1	--	T-5
P84-9-8	--	--	--	--	--	T-3	2-1	1-1	--	0
W1099Russ	0	1-1	T-1	2.5	1-1	2-4	0-0	0	0	T-2
W1100R	0	T-1	T-1	3	5-4	1-5	T-1	1-1	0	1-4
W1149	0	0	T-1	3	4-3	1-3	2-1	2-1	0	T-5

^{1/} AREA

- T = less than 1 %
 1 = 1-20 %
 2 = 21-40 %
 3 = 41-60 %
 4 = 61-80 %
 5 = 80-100 %

TYPE

- 1 = Small, superficial
 2 = Larger, superficial
 3 = Larger, rough pustules
 4 = Larger pustules, shalloweyes
 5 = Very large pustules, deep holes

^{2/} Different Rating Method

1. Little or no infection
 2. Susceptible
 3. Highly susceptible - severe pitting

North Central Regional Trial Table 7. Summary of Grade Defects - 1994.

Cultivar or Selection	External					Internal				
	Scab	Growth Cracks	Off Shape and Second Growth	Tuber Rot	Sun Green	Total Free of External Defects ^{1/}	Hollow Heart	Internal Necrosis	Vascular Discolor ation	Total Free of Internal Defects ^{1/}
Norchip	6.0	5.4	5.7	0.1	6.0	77.5	0.8	4.7	8.8	86.0
Dark Red Norland	8.4	1.7	1.1	0.0	1.9	87.3	1.3	0.6	7.8	90.3
Red Pontiac	22.2	2.2	8.9	0.0	2.1	65.1	3.8	1.4	2.5	92.3
Russet Burbank	2.3	7.5	17.4	0.4	2.7	73.8	6.1	2.3	2.9	88.7
Russet Norkotah	8.0	0.3	3.0	0.1	1.5	87.4	3.0	0.0	8.4	88.6
Minn. 12823	6.1	0.2	9.0	0.4	8.3	76.1	1.7	1.1	4.7	92.9
Minn. 13540	5.9	1.2	4.9	0.0	4.9	83.4	0.7	0.1	8.4	90.8
Minn. 15220	7.1	1.5	8.2	0.6	3.5	79.5	0.4	0.0	5.4	94.3
ND2417-6	10.4	1.1	4.2	0.0	7.5	78.0	0.9	0.0	4.3	94.8
ND2471-8	11.3	1.4	0.7	0.1	5.0	81.5	9.0	0.2	6.4	83.9
P83-11-5	13.8	3.0	1.3	0.0	3.3	78.3	0.0	0.0	0.0	100.0
P84-9-8	40.8	9.5	1.3	0.3	4.5	50.3	1.0	0.5	0.3	98.3
W1099Russ	11.6	4.8	4.0	0.0	1.3	76.7	0.1	0.3	1.4	97.5
W1100R	13.2	0.9	1.9	0.0	2.5	82.2	0.1	0.0	6.8	93.1
W1149	12.0	1.6	1.0	0.2	3.1	82.2	9.9	0.0	8.2	82.1
Average	11.9	2.8	4.8	0.2	3.9	77.3	2.6	0.8	5.1	91.6

^{1/} Percent normal tubers showing no defects (some individuals had more than one type of defect).

North Central Regional Trial Table 8. Chip Color - 1994.

Cultivar or Selection	Alb. (Ag) ^{1/}	Man. (Ag)	MI (PCII) ^{2/}	NE (Ag)	North Dakota (PCII)	OH (PCII)	WI (PCII)
Norchip	58	50	2.0	67	4.0	4.0	6.0
Dark Red Norland	42	47	3.5	56	5.0	31	8.9
Red Pontiac	30	22	4.5	43	5.0	20	10.0
Russet Burbank	43	37	3.0	52	5.0	29	8.4
Russet Norkotah	25	35	3.5	52	5.0	28	8.3
Minn. 12823	59	47	2.0	59	4.0	36	8.1
Minn. 13540	58	52	1.5	60	4.0	38	6.8
Minn. 15220	29	27	4.0	39	5.0	32	9.9
ND2417-6	65	60	1.5	58	3.0	48	5.5
ND2471-8	62	53	1.5	64	3.0	45	4.5
P83-11-5	--	--	--	61	4.0	43	4.9
P84-9-8	--	--	--	66	4.0	35	6.4
W1099Russ	49	44	3.5	57	5.0	22	8.6
W1100R	52	52	3.0	60	4.0	36	8.4
W1149	60	57	1.5	62	4.0	39	4.8
Average	48.6	44.9	2.7	57.1	4.3	34.8	7.3

^{1/} Agron (Highest number lightest)^{2/} PCII Color Chart (1 = lightest; 10 = darkest)

North Central Regional Trial Table 9. Chip Scores of 1994 NC Trial Entries Harvested at Hancock, WI after Storage, Cold Storage and Reconditioning. Data from Dr. C. Thill, University of Wisconsin, Madison.

Variety	Sp.Gr.	Chip Color ¹		
		1/10/D	3/4/D	3/4/2
Norchip	1.081	6.0	9.2	7.5
Dark Red Norland	1.058	8.9	10.0	9.9
Red Pontiac	1.059	10.0	10.0	10.0
Russet Burbank	1.084	8.4	9.8	7.8
Russet Norkotah	1.069	8.3	10.0	8.4
MN 12823	1.082	8.1	9.0	8.8
MN 13540	1.076	6.8	10.0	8.8
MN 15220	1.066	9.9	10.0	10.0
ND 2417-6	1.075	5.5	8.4	6.8
ND 2471-8	1.081	4.5	9.1	6.6
P 83-11-5	1.082	4.9	8.9	6.6
P 84-9-8	1.077	6.4	8.9	6.4
W 1099 Russ	1.070	8.6	10.0	8.0
W 1100 Red	1.068	8.4	10.0	10.0
W 1149	1.092	4.8	9.1	6.1

Chip Color, 1 - 10; acceptable < = 4.5; data average of 4 reps.

1/10/D = 1 month storage / 10 C / Direct fry from storage.

3/4/D = 3 months storage / 4 C / Direct fry from storage.

3/4/2 = 3 months storage / 4 C / Two weeks reconditioning (18-20 C) fry from storage.

Harvest 16 September 1994.

Chip evaluation, 3-tuber sample cut longitudinally.

North Central Regional Trial Table 10. General Merit Ratings - 1994.^{1/}

Cultivar or Selection	Alb. ^{2/}	Man.	IA	MI ^{3/}	MN	NE ^{4/}	ND	OH	SD ^{5/}	WI	Total Points
Norchip	1					5			4		10
Dark Red Norland				4						3	7
Red Pontiac									2		2
Russet Burbank					1						1
Russet Norkotah	2		2					1		2	7
Minn. 13540			3	5	2	1.5		3			14.5
Minn. 12823		2			5	1.5	4		5	4	21.5
Minn. 15220		4			3		1	2			10
ND2417-6	4	1	5	1	4		3	4		1	23
ND2471-8	5	3		5			5	5			23
P83-11-5											0
P84-9-8											0
W1099Russ			1	2						5	8
W1100R			4			4					8
W1149		5		3		3	2		3		16

^{1/} Merit Ratings	Rating	Points
1. ND2417-6 - 23 points	1	5
1. ND2471-8 - 23 points	2	4
2. Minn. 12823 - 21.5 points	3	3
3. W1149 - 16 points	4	2
4. Minn. 13540 - 14.5 points	5	1

^{2/} Norgold Russet rated 3rd place

^{3/} Two first place ratings

^{4/} Two ranked as tie for 4th & 5th place

^{5/} No 5th place rating

WESTERN REGIONAL POTATO VARIETY TRIAL

J. J. Pavék, D. L. Corsini, and Cooperators

Uniform Potato Yield Trial

The 1994 trial was again grown at twelve locations for yield; disease data are from two of the locations. Twenty-six entries, 22 experimental, two standard checks, and two early checks, were grown. Three locations grew entries for both early and late harvest. The trial locations, dates of planting, vine killing, and harvest, and

days from planting to vine-kill/harvest are shown below. Cultural practices and the use of fertilizer, herbicides, pesticides, and vine killing varied according to local conditions. Trial plots at all locations were irrigated on a regular schedule throughout the entire growing season according to plant needs. Growing season temperatures were normal in California and hotter than normal at all other locations.

Pavék, Breeder, and Corsini, Pathologist, USDA-ARS, Univ. of Idaho, PO Box AA, Aberdeen, ID 83210. Cooperators: California, R. Voss, K. Brittan; Colorado, D. Holm; Idaho, S. Love, G. Kleinkopf; New Mexico, A. Carter, N. Christensen, E.J. Gregory; Oregon, A. Mosley, D. Hane, K. Rykbost, C. Stanger, S. James; Texas, D. Smallwood, J. C. Miller, Jr.; Washington, R. Thornton, M. Martin, L. Mikitzel, C. Brown.

Data on vines, tubers, yield, internal quality, disease reactions, merit scores, and disposition are presented in Western Tables 1 through 7. Four lots of NDO2904-7 had TGA levels well beyond 20 mg. After 3 years in the trial, AO84275-3 is being tried for organic farming and A83980-3 for early fresh market. Other entries are continuing or dropping out as indicated in Western Table 7.

State	Location	Planting Date	Vine-Kill Date	Harvest Date	Days to Vine-Kill/ Harvest
California	Kern Co.	2/17	6/1	6/20	114
"	Tulelake	5/10	9/3	9/19	116
Colorado	San Luis Vly	5/20	9/9	9/29	112
Idaho	Aberdeen	4/28	9/1	9/13	126
"	Kimberly-Early	4/29	8/1	8/4	94
"	Kimberly-Late	4/29	---	10/11	165
New Mexico	Clovis	3/7	7/29	8/8	113
"	Farmington	4/15	---	9/20	158
Oregon	Hermiston-Early	3/23	---	8/1	131
"	Hermiston-Late	4/20	10/3	10/12	166
"	Klamath Fls	5/11	9/4	9/27	116
"	Malheur	5/3	---	9/26	146
Texas	Springlake	3/25	7/20	8/15	117
Washington	Othello - Early	4/8	7/27	7/30	110
"	Othello - Late	4/11	9/9	9/20	151

Western Table 1. 1994 Seed source, stand, tuber and vine characteristics, and foliar and tuber diseases at Aberdeen, ID.^{1/}

Entry	Year in Trial	Seed Source	Stand (6 loc) %	TUBERS		Vine		Vert. Wilt	Early Blight	Common Scab	Net Necrosis		Erwinia Soft Rot
				Shape	Skin	Size	Mat				HRM	AB	
Russet Burbank	ck	OR	93	L	RUS	ML	ML	S	S	R	MS	S	MR
Ranger Russet	ck	OR	93	L	RUS	M	ML	MR	S	MS	MS	MR	MR
A8333-5	2	OR	91	L	RUS	MS	ML	R	S	R	MS	MS	MR
A8495-1	2	ID	93	L	RUS	M	M	S	S	MS	MS	MS	MR
A84180-8	2	ID	93	L	RUS	M	M	S	S	VR	MS	MR	S
AC83064-1	2	CO	90	O	RUS	M	ML	R	S	R	S	R	S
AC83064-6	2	CO	91	L	RUS	ML	ML	MS	S	VR	MS	R	MR
AC84487-1	1	CO	92	L	RUS	MS	E	S	VS	S	MS	MR	MR
AO85165-1	1	OR	91	O	RUS	M	ML	R	MS	R	MS	--	MS
CO84074-2	1	CO	89	O	RUS	M	ME	S	S	R	MS	MS	S
NDO2904-7	3	OR	90	L	RUS	MS	ME	S	S	MS	MS	MR	S
A81386-1	2	ID	91	O	RUS	ML	ML	R	S	R	MS	MR	S
A83115-12	2	OR	91	L	RUS	M	M	VR	S	MS	MS	MR	S
A84118-3	1	OR	91	L	RUS	ML	ML	R	MS	VR	MS	MR	S
AO80432-1	1	OR	76	L	RUS	ML	ML	R	MS	R	MS	MR	S
AO8478-1	1	OR	89	L	RUS	ML	ML	R	MS	VS	MS	MR	MS
AO84275-3	3	OR/WA	90	O	RUS	ML	M	R	S	VR	MS	MR	MS
COO8390-1	2	OR	90	O	RUS	M	ML	R	S	R	MS	S	S
RBM 12	1	OR	91	L	RUS	ML	ML	MR	S	MR	MS	R	S
RBM 15	1	OR	92	L	RUS	ML	ML	R	MS	R	--	--	MR
Russet Norkotah	ck	OR	94	L	RUS	S	E	VS	VS	R	MS	--	MR
Shepody	ck	OWN	94	O	WHT	M	M	S	S	S	MS	MR	S
A81286-1	3	OR/WA	93	O	RUS	ML	ML	VR	MS	MS	MS	MS	MR
A8390-3	3	OR	90	O	RUS	MS	M	S	VS	R	MS	MS	MS
ATX84706-2	1	OR	95	O	WHT	ML	ME	S	VS	S	MS	--	S
TX1229-2	1	OR	94	O	WHT	M	ME	S	VS	S	MS	--	S

^{1/} Shape: 0 = oblong, L = long, R = round; Vine size: S = small, M = medium, MS = medium small, ML = medium large, Lrg = large; Mat = maturity: E = early, M = medium, L = late, ME = medium early, ML = medium late; Disease reaction: R = resistant, S = susceptible, VR = very resistant, MR = moderately resistant, MS = moderately susceptible, VS = very susceptible.

Western Table 2. 1994 Total tuber yield, cwt/acre; full season and early harvest, early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon		Texas		Wash		Overall	
	Krn	Tul	Slv	Ab	Kim	Clv	Frm	Hrm	Kim	Mal	Spr	Oth	Mean			
Russet Burbank	(487)	582	456	473	651 (397)	(306)	768	1161 (---)	640	643	(264)	557 (530)	659 (397)			
Ranger Russet	(517)	674	424	459	582 (378)	(286)	627	638 (441)	591	619	(240)	472 (502)	565 (394)			
A8333-5	(566)	648	423	514	623 (317)	(270)	645	1031 (534)	747	604	(166)	650 (592)	654 (408)			
A8495-1	(489)	504	352	413	521 (289)	(286)	739	633 (397)	503	497	(304)	457 (425)	513 (365)			
A84180-8	(348)	649	393	476	585 (346)	(247)	712	745 (468)	568	533	(103)	496 (473)	573 (331)			
AC83064-1	(689)	664	443	528	636 (385)	(239)	723	1056 (535)	555	691	(257)	599 (624)	655 (455)			
AC83064-6	(449)	481	388	345	523 (298)	(240)	528	1123 (462)	462	499	(188)	458 (407)	534 (341)			
AC84487-1	(410)	659	275	356	389 (331)	(118)	540	458 (467)	493	---	(232)	368 (351)	442 (318)			
AO85165-1	(520)	762	436	521	658 (314)	(205)	589	1089 (535)	690	498	(261)	627 (600)	652 (406)			
CO84074-2	(473)	667	330	444	482 (344)	(284)	643	635 (404)	537	---	(189)	563 (447)	538 (357)			
NDO2904-7	(501)	564	325	395	531 (308)	(214)	681	492 (496)	450	563	(207)	366 (394)	485 (353)			
A81386-1	(---)	595	396	441	568 (---)	(---)	637	956 (---)	573	524	(---)	522 (---)	579 (---)			
A83115-12	(---)	638	405	513	731 (---)	(---)	749	900 (---)	586	717	(---)	588 (---)	647 (---)			
A84118-3	(---)	663	398	444	549 (---)	(---)	513	871 (---)	558	480	(---)	523 (---)	555 (---)			
AO80432-1	(---)	448	292	301	378 (---)	(---)	629	849 (---)	486	570	(---)	571 (---)	503 (---)			
AO8478-1	(---)	646	381	452	558 (---)	(---)	556	611 (---)	550	482	(---)	494 (---)	526 (---)			
AO84275-3	(---)	573	425	476	626 (---)	(---)	638	804 (---)	483	430	(---)	519 (---)	553 (---)			
COO8390-1	(---)	565	438	384	568 (---)	(---)	658	739 (---)	513	418	(---)	491 (---)	530 (---)			
RBM 12	(---)	627	402	472	506 (---)	(---)	745	930 (---)	536	552	(---)	566 (---)	593 (---)			
RBM 15	(---)	571	437	427	627 (---)	(---)	576	752 (---)	590	593	(---)	538 (---)	568 (---)			
Russet Norkotah	(455)	---	185	---	---	(189)	---	---	362	---	(116)	---	---	(281)		
Shepody	(510)	---	425	---	---	(282)	---	---	580	---	(257)	---	---	(387)		
A81286-1	(558)	---	435	---	---	(210)	---	---	666	---	(269)	---	---	(381)		
A8390-3	(387)	---	354	---	---	(265)	---	---	363	---	(62)	---	---	(346)		
ATX84706-2	(483)	---	341	---	---	(333)	---	---	470	---	(425)	---	---	(443)		
TX1229-2	(---)	---	378	---	---	(321)	---	---	490	---	(407)	---	---	(435)		
Location Means	(477)	609	382	442	5665 (335)	(254)	645	824 (481)	540	551	(231)	521 (459)	566 (371)			

Western Table 3. 1994 U.S. No. 1's, percent of total yield for locations; overall mean, percent and cwt/acre; early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon		Texas		Wash		Mean	
	Krn	Tul	Slv	Ab	Kim	Clv	Frm	Hrm	Klm	Mal	Spr	Oth	%	cwt/A		
Russet Burbank	(43)	72	73	67	72 (65)	(31)	96	57	(--)	78	61	(31)	58 (69)	70	462 (202)	
Ranger Russet	(85)	70	87	86	75 (77)	(51)	95	84 (82)	80	77	(67)	72 (74)	81	455 (295)		
A8333-5	(41)	83	84	85	82 (68)	(58)	94	92 (84)	89	73	(56)	84 (80)	85	560 (270)		
A8495-1	(85)	92	64	86	86 (69)	(70)	97	90 (76)	92	90	(69)	83 (75)	87	453 (274)		
A84180-8	(57)	83	81	85	82 (75)	(59)	97	80 (86)	89	81	(68)	74 (81)	83	481 (244)		
AC83064-1	(89)	92	90	90	91 (85)	(64)	98	90 (90)	90	81	(65)	82 (80)	89	586 (374)		
AC83064-6	(88)	91	91	87	87 (79)	(70)	96	90 (92)	89	85	(63)	83 (80)	89	476 (277)		
AC84487-1	(81)	77	82	83	85 (75)	(65)	94	81 (82)	86	--	(63)	68 (69)	82	364 (238)		
AO85165-1	(79)	80	87	88	83 (74)	(51)	95	94 (88)	92	85	(55)	76 (80)	87	568 (307)		
CO84074-2	(84)	95	82	85	88 (75)	(74)	97	96 (81)	91	--	(74)	82 (80)	90	486 (281)		
NDO2904-7	(90)	95	83	91	87 (81)	(77)	98	92 (92)	90	92	(86)	85 (80)	90	443 (302)		
A81386-1	(--)	88	79	84	85 (--)	(--)	94	93 (--)	88	86	(--)	83 (--)	87	508 (--)		
A83115-12	(--)	87	88	82	82 (--)	(--)	95	84 (--)	86	80	(--)	84 (--)	84	545 (--)		
A84118-3	(--)	92	83	83	92 (--)	(--)	96	88 (--)	79	71	(--)	70 (--)	84	470 (--)		
AO80432-1	(--)	87	81	85	84 (--)	(--)	94	92 (--)	85	80	(--)	87 (--)	86	438 (--)		
AO8478-1	(--)	90	78	52	84 (--)	(--)	98	71 (--)	73	76	(--)	61 (--)	76	403 (--)		
AO84275-3	(--)	80	81	84	86 (--)	(--)	96	92 (--)	73	86	(--)	84 (--)	85	473 (--)		
COO8390-1	(--)	92	73	77	83 (--)	(--)	97	89 (--)	78	62	(--)	76 (--)	81	437 (--)		
RBM 12	(--)	75	65	74	54 (--)	(--)	98	52 (--)	61	46	(--)	47 (--)	64	379 (--)		
RBM 15	(--)	70	69	64	75 (--)	(--)	93	64 (--)	68	65	(--)	69 (--)	71	402 (--)		
Russet Norkotah	(94)	--	--	--	-- (81)	(72)	--	-- (86)	--	--	(77)	-- (72)	--	-- (233)		
Shepody	(80)	--	--	--	-- (75)	(61)	--	-- (89)	--	--	(73)	-- (63)	--	-- (289)		
A81286-1	(84)	--	--	--	-- (66)	(75)	--	-- (84)	--	--	(78)	-- (69)	--	-- (292)		
A8390-3	(89)	--	--	--	-- (81)	(86)	--	-- (87)	--	--	(74)	-- (83)	--	-- (295)		
ATX84706-2	(91)	--	--	--	-- (87)	(80)	--	-- (89)	--	--	(96)	-- (86)	--	-- (393)		
TX1229-2	(--)	--	--	--	-- (87)	(86)	--	-- (93)	--	--	(93)	-- (86)	--	-- (389)		
Location Means	(78)	85	81	81	82 (76)	(67)	96	84 (86)	84	76	(70)	75 (77)	82	469 (286)		

Western Table 4. 1994 U.S. No. 1's over 12 oz, percent of total yield for locations; overall mean, percent and cwt/acre; early harvest in parentheses.

Entry	Calif		Colo		Idaho		NMex		Oregon			Texas		Wash		Mean	
	Krn	Tul	Slv	Ab	Kim	Clv	Frm ^{1/2}	Hrm	Kim	Mal	Spr	Oth	%	cwt/A			
Russet Burbank	(1)	17	17	9	37 (3)	(0)	4	19 (--)	8	10	(1)	12 (6)	15	99 (10)			
Ranger Russet	(24)	23	48	19	36 (5)	(1)	2	46 (10)	19	20	(3)	25 (15)	26	146 (45)			
A8333-5	(7)	27	33	26	25 (2)	(1)	9	31 (8)	25	16	(0)	39 (15)	26	169 (30)			
A8495-1	(15)	33	11	16	25 (1)	(5)	6	25 (1)	22	30	(16)	9 (2)	20	101 (25)			
A84180-8	(9)	47	31	17	32 (1)	(8)	12	21 (4)	12	23	(9)	22 (10)	24	137 (22)			
AC83064-1	(39)	32	50	43	41 (4)	(1)	12	55 (9)	20	21	(11)	41 (22)	35	233 (84)			
AC83064-6	(33)	43	38	38	38 (9)	(2)	6	60 (18)	21	33	(3)	50 (29)	36	209 (65)			
AC84487-1	(16)	30	28	22	25 (2)	(1)	3	9 (14)	17	--	(8)	9 (9)	18	78 (31)			
AO85165-1	(22)	36	46	24	42 (2)	(3)	19	59 (9)	34	38	(3)	41 (21)	38	256 (51)			
CO84074-2	(24)	52	23	34	39 (2)	(16)	22	41 (1)	26	--	(24)	36 (25)	34	188 (54)			
NDO2904-7	(28)	52	55	43	51 (18)	(4)	31	41 (28)	34	41	(26)	27 (32)	42	201 (87)			
A81386-1	(--)	29	27	16	29 (--)	(--)	1	45 (--)	23	22	(--)	28 (--)	24	150 (--)			
A83115-12	(--)	54	27	38	44 (--)	(--)	13	41 (--)	20	41	(--)	38 (--)	35	229 (--)			
A84118-3	(--)	23	22	16	28 (--)	(--)	7	25 (--)	4	3	(--)	17 (--)	16	94 (--)			
AO80432-1	(--)	32	21	25	17 (--)	(--)	2	25 (--)	13	14	(--)	24 (--)	19	94 (--)			
AO8478-1	(--)	34	32	14	36 (--)	(--)	10	30 (--)	8	31	(--)	22 (--)	24	127 (--)			
AO84275-3	(--)	9	24	13	22 (--)	(--)	3	16 (--)	5	8	(--)	18 (--)	13	73 (--)			
COO8390-1	(--)	34	17	12	17 (--)	(--)	18	19.6 (--)	3	4.9	(--)	27 (--)	17	94 (--)			
RBM 12	(--)	22	17	16	22 (--)	(--)	19	22.6 (--)	8	3.6	(--)	11 (--)	16	96 (--)			
RBM 15	(--)	17	24	6	29 (--)	(--)	2	16.6 (--)	5	8.1	(--)	8 (--)	13	73 (--)			
Russet Norkotah	(32)	--	--	--	-- (8)	(1)	--	-- (7)	--	--	(13)	-- (2)	--	-- (36)			
Shepody	(38)	--	--	--	-- (13)	(5)	--	-- (38)	--	--	(8)	-- (35)	--	-- (105)			
A81286-1	(31)	--	--	--	-- (2)	(8)	--	-- (4)	--	--	(10)	-- (14)	--	-- (52)			
A8390-3	(27)	--	--	--	-- (12)	(6)	--	-- (14)	--	--	(29)	-- (14)	--	-- (53)			
ATX84706-2	(40)	--	--	--	-- (17)	(32)	--	-- (50)	--	--	(57)	-- (51)	--	-- (187)			
TX1229-2	(--)	--	--	--	-- (24)	(36)	--	-- (54)	--	--	(58)	-- (47)	--	-- (196)			
Location Means	(23)	32	31	22	32 (8)	(8)	10	32 (17)	19	20	(17)	25 (20)	25	143 (66)			

^{1/2} U.S. No. 1's over 3".

Western Table 5. 1994 Specific gravity of tubers; early harvest in parentheses.

Entry	Calif		Colo	Idaho		NMex		Oregon		Texas		Wash		Overall
	Krn	Tul	Slv	Ab	Kim	Clv	Frm	Hrm	Klm	Mal	Spr	Oth	Mean	
Russet Burbank	(1.092)	1.092	1.078	1.082	1.082 (1.071)		1.100	1.084 (---)	1.092	1.076	(1.072)	1.076(1.079)	1.085 (1.079)	
Ranger Russet	(1.086)	1.091	1.075	1.083	1.087 (1.076)		1.096	1.084(1.082)	1.085	1.098	(1.065)	1.078(1.078)	1.086 (1.077)	
A8333-5	(1.078)	1.087	1.075	1.077	1.078 (1.068)		1.093	1.073(1.076)	1.085	1.083	(1.062)	1.072(1.072)	1.080 (1.071)	
A8495-1	(1.094)	1.078	1.088	1.089	1.085 (1.078)		1.093	1.083(1.089)	1.091	1.091	(1.070)	1.082(1.084)	1.087 (1.083)	
A84180-8	(1.079)	1.085	1.078	1.081	1.078 (1.072)		1.089	1.072(1.086)	1.085	1.075	(1.067)	1.070(1.077)	1.079 (1.076)	
AC83064-1	(1.076)	1.081	1.066	1.073	1.078 (1.066)		1.091	1.065(1.077)	1.083	1.084	(1.067)	1.072(1.070)	1.077 (1.071)	
AC83064-6	(1.079)	1.082	1.072	1.075	1.075 (1.073)		1.096	1.069(1.080)	1.081	1.082	(1.071)	1.076(1.073)	1.079 (1.075)	
AC84487-1	(1.079)	1.093	1.068	1.067	1.065 (1.070)		1.098	1.061(1.071)	1.069	---	(1.063)	1.066(1.071)	1.073 (1.071)	
AO85165-1	(1.085)	1.085	1.075	1.077	1.075 (1.065)		1.088	1.073(1.075)	1.084	1.078	(1.059)	1.068(1.067)	1.078 (1.070)	
CO84074-2	(1.073)	1.079	1.069	1.068	1.069 (1.066)		1.089	1.061(1.077)	1.075	---	(1.060)	1.068(1.069)	1.072 (1.069)	
NDO2904-7	(1.078)	1.074	1.070	1.074	1.069 (1.066)		1.086	1.062(1.073)	1.072	1.068	(1.060)	1.067(1.069)	1.071 (1.069)	
A81386-1	(---)	1.087	1.073	1.080	1.080 (---)		1.094	1.075 (---)	1.083	1.080	(---)	1.073 (---)	1.081 (---)	
A83115-12	(---)	1.074	1.070	1.075	1.076 (---)		1.089	1.066 (---)	1.079	1.080	(---)	1.073 (---)	1.076 (---)	
A84118-3	(---)	1.097	1.088	1.093	1.080 (---)		1.090	1.096 (---)	1.098	1.097	(---)	1.089 (---)	1.092 (---)	
AO80432-1	(---)	1.095	1.083	1.092	1.092 (---)		1.095	1.084 (---)	1.094	1.097	(---)	1.084 (---)	1.091 (---)	
AO8478-1	(---)	1.089	1.081	1.085	1.081 (---)		1.096	1.075 (---)	1.088	1.083	(---)	1.078 (---)	1.084 (---)	
AO84275-3	(---)	1.093	1.082	1.095	1.100 (---)		1.102	1.098 (---)	1.098	1.103	(---)	1.092 (---)	1.096 (---)	
COO8390-1	(---)	1.090	1.081	1.084	1.089 (---)		1.089	1.078 (---)	1.088	1.087	(---)	1.078 (---)	1.085 (---)	
RBM 12	(---)	1.093	1.080	1.082	1.081 (---)		1.093	1.084 (---)	1.092	1.082	(---)	1.072 (---)	1.084 (---)	
RBM 15	(---)	1.090	1.076	1.079	1.080 (---)		1.093	1.080 (---)	1.091	1.075	(---)	1.074 (---)	1.082 (---)	
Russet Norkotah	(1.082)	---	1.071	---	--- (1.075)		---	---(1.077)	1.072	---	(1.079)	---(1.072)	--- (1.077)	
Shepody	(1.082)	---	1.076	---	--- (1.068)		---	---(1.080)	1.083	---	(1.059)	---(1.078)	--- (1.073)	
A81286-1	(1.087)	---	1.078	---	--- (1.069)		---	---(1.082)	1.085	---	(1.063)	---(1.073)	--- (1.075)	
A8390-3	(1.082)	---	1.081	---	--- (1.076)		---	---(1.085)	1.087	---	(1.071)	---(1.082)	--- (1.079)	
ATX84706-2	(1.081)	---	1.077	---	--- (1.076)		---	---(1.078)	1.080	---	(1.070)	---(1.077)	--- (1.076)	
TX1229-2	(---)	---	1.077	---	--- (1.075)		---	---(1.081)	1.086	---	(1.065)	---(1.080)	--- (1.075)	
Location Means	(1.082)	1.087	1.076	1.081	1.080 (1.071)		1.093	1.076(1.079)	1.085	1.084	(1.066)	1.075(1.075)	1.082 (1.075)	

Western Table 6. 1994 External and internal defects, french fry color, sugar ends, dextrose, and vitamin C.

U.S. No.2

Entry	& Culls > 4 oz % ^{1/}	Growth Cracks (9 loc) ^{2/}	Shatter Bruise (6 loc) ^{2/}	Hollow Heart % ^{3/}	Black- Spot (6 loc) ^{4/}	French Fry Color ^{5/}	Sugar Ends % ^{6/}	Dextrose YSI % DWB ^{7/}	Vit. C Mg/100g FWB ^{7/}
Russet Burbank	21	3.9	4.6	7	2.3	1.1	37	0.11	16.0
Ranger Russet	14	4.5	4.5	1	2.7	1.1	31	0.13	26.9
A8333-5	6	4.6	4.4	1	2.6	1.5	32	0.09	21.3
A8495-1	3	4.9	4.3	11	2.2	0.4	13	0.05	22.3
A84180-8	10	4.2	4.2	3	1.4	1.5	23	0.18	25.2
AC83064-1	7	4.8	4.7	1	1.2	2.1	49	0.22	20.4
AC83064-6	6	4.7	4.6	6	1.9	1.3	34	0.09	23.4
AC84487-1	8	4.4	4.3	2	1.8	1.7	27	0.10	18.9
AO85165-1	8	4.6	4.5	3	1.9	1.6	32	0.15	18.6
CO84074-2	4	4.9	3.7	6	1.4	3.0	48	0.24	16.8
NDO2904-7	4	5.0	4.7	1	1.7	1.9	20	0.12	20.2
A81386-1	4	4.9	4.4	0	2.2	0.5	6	0.07	26.2
A83115-12	12	4.3	3.9	1	2.0	2.0	35	0.19	19.2
A84118-3	5	4.8	4.5	4	1.3	0.7	27	0.06	16.8
AO80432-1	3	4.8	3.7	8	2.4	1.0	22	0.10	22.3
AO8478-1	18	3.3	4.3	8	2.4	1.1	47	0.12	21.6
AO84275-3	5	4.7	4.1	4	2.3	0.8	26	0.08	22.2
COO8390-1	5	4.7	3.9	2	1.1	1.3	36	0.09	19.9
RBM 12	26	4.1	4.3	6	1.8	1.0	51	0.13	16.5
RBM 15	18	3.9	4.0	5	2.1	1.1	33	0.10	16.0
Russet Norkotah	--	5.0	5.0	2	1.0	1.6	13	---	---
Shepody	--	4.8	4.8	6	1.0	2.7	17	---	---
A81286-1	--	4.3	5.0	0	1.4	1.5	13	---	---
A8390-3	--	4.5	4.2	4	1.8	1.6	17	---	---
ATX84706-2	--	4.1	4.0	3	2.6	1.5	9	---	---
TX1229-2	--	3.9	3.9	1	2.7	1.1	0	---	---
Means	9	4.5	4.3	4	1.9	1.4	27	0.12	20.5

^{1/} Firm omitted. Late Harvest, eight locations.^{2/} 5.0 (none) to 1.0 (severe).^{3/} Mean of 11 locations including Early Harvest, > 12 oz. tubers; includes brown center.^{4/} Mean of 6 locations, 1.0 (lightest) to 5.0 (darkest).^{5/} Mean of 4 locations (SLV, AB, Kim, Klm), out of 45 F storage, < 1.0 (lightest) to 4.0 (darkest).^{6/} Mean of 4 locations (Ab, Kim, Hrm, Mal).^{7/} Aberdeen tubers only, sampled late October; DWB = dry weight basis; FWB = fresh weight basis.

Western Table 7. 1994 Merit scores, processing and fresh market, and disposition.

Entry	Merit Score: Processing ^{1/}				Merit Score: Fresh Market ^{1/}					Mean	Disposition ^{3/}
	Colo	Idaho	Oregon	Mean	Calif	Colo	Idaho	Oregon	Texas		
	Slv	2/	Hrm		Tul	Slv	2/	Hrm	Spr		
Russet Burbank	4.0	3.3	2.0	3.2	2.5	4.0	3.3	1.0	1.0	2.6	CHECK
Ranger Russet	1.0	4.3	3.5	3.5	2.1	4.0	4.0	3.0	2.0	3.3	CHECK
A8333-5	1.0	3.2	2.5	2.6	3.4	4.0	3.5	3.0	2.5	3.3	DROP
A8495-1	2.0	4.8	4.0	4.1	4.1	1.0	4.0	3.0	3.0	3.3	CONT
A84180-8	3.0	3.7	4.0	3.7	3.6	3.0	5.0	4.0	2.0	4.0	CONT
AC83064-1	1.0	2.0	2.0	1.8	3.4	5.0	4.0	3.5	2.8	3.8	CONT
AC83064-6	4.0	3.2	3.0	3.3	4.1	4.0	3.5	3.0	2.5	3.4	CONT
AC84487-1	1.0	2.3	2.5	2.2	2.9	1.0	3.7	2.5	2.5	2.8	CONT
AO85165-1	1.0	2.5	3.5	2.6	3.0	5.0	3.8	3.5	2.5	3.6	CONT
CO84074-2	1.0	1.3	1.5	1.3	3.9	1.0	2.7	2.0	2.8	2.5	CONT
NDO2904-7	2.0	2.7	3.0	2.7	4.3	2.0	4.2	4.5	3.0	3.9	RTC
A81386-1	4.0	5.0	5.0	4.8	4.0	3.0	4.8	4.0	---	4.1	CONT
A83115-12	1.0	2.5	4.0	2.5	3.4	4.0	4.0	3.0	---	3.7	CONT
A84118-3	3.0	4.8	4.0	4.1	3.3	3.0	3.8	3.0	---	3.4	CONT
AO80432-1	1.0	3.3	4.0	2.9	3.3	1.0	2.5	3.0	---	2.5	CONT
AO8478-1	2.0	4.0	1.0	2.8	3.1	2.0	3.5	1.0	---	2.6	DROP
AO84275-3	4.0	4.3	3.0	3.9	2.3	4.0	3.8	2.0	---	3.2	RTC
COO8390-1	1.0	3.5	3.0	2.8	3.1	3.0	2.5	3.0	---	2.8	DROP
RBM 12	2.0	3.3	2.0	2.6	2.3	2.0	2.8	1.0	---	2.2	DROP
RBM 15	3.0	3.0	2.0	2.8	2.7	3.0	3.5	1.0	---	2.7	DROP
Russet Norkotah	1.0	4.0	3.0	2.7	---	1.0	4.0	4.0	1.8	2.7	CHECK
Shepody	1.0	4.0	5.0	3.3	---	4.0	2.0	4.0	2.8	3.2	CHECK
A81286-1	5.0	3.0	3.0	3.7	---	5.0	3.0	3.0	2.8	3.5	RTC
A8390-3	1.0	5.0	4.0	3.3	---	3.0	5.0	5.0	1.0	3.5	RTC
ATX84706-2	2.0	4.0	3.0	3.0	---	2.0	1.0	4.0	4.0	2.8	CONT
TX1229-2	3.0	4.0	3.0	3.3	---	3.0	2.0	3.0	4.0	3.0	CONT
Location Means	2.1	3.3	3.1	3.0	3.2	3.0	5.4	3.1	2.5	3.2	

^{1/} 1.0 (poorest) to 5.0 (best).^{2/} Composite scores for Ab & Kim and for HRM early and late trials.^{3/} RTC = regional testing completed (3 yrs), CONT = continue in trial, DROP = drop from trial, CHECK = control.

CALIFORNIA

R.E. Voss, K.L. Brittan, G. Browne, H. Carlson, D. Holm, J. Pavak, R. Johansen, K. Rykbost

Objectives

1. Obtain or develop new and/or improved russet, white, red, processing and specialty varieties of improved adaptability and quality.
2. Demonstrate the characteristics of the many new varieties and advanced selections being developed in the U.S.
3. Determine relative resistance/susceptibility of named varieties and advanced selections to common diseases and environmental stresses.
4. Establish an improved seed increase program.

Summary

Evaluation trials were grown in Kern County, Tulalake, Santa Maria and Humboldt Co. The types of trials conducted included Western Regional early russet and late russet trials; Western Regional red trial; Snack Food Association nationwide uniform chipping trial; TPS true seed selections in a replicated trial in Kern Co.; replicated russet and red trials at two nitrogen rates at Tulalake; UC replicated trials of russets, chippers, reds, whites and specialty varieties; observational trials of 5-hill, 12-hill, 27-hill and 2X27-hill entries, and a storage evaluation trial at Tulalake.

The highest rated russets in 1994 were **A81386-1, A84118-3, AC83064-1, AC83064-6, NDO2904-7** and **Russet Norkotah**.

The highest rated reds in 1994 were **A82705-1, AD82705-1** (formerly called AD82745-1), **ND1871-3, NDO 2438-6, NDO2438-7, and NDO2686-6**.

The highest rated chippers in 1994 were **AF875-15, ND2676-10, Atlantic, Chipeta, and Suncrisp**.

The highest rated long whites in 1994 were **AD84087-1** and **ND2050-1**.

The highest rated specialty types in 1994 were **Delta Gold, G742-4X, Red Gold, Rose Gold** and **Yukon Gold**.

Replicated Yield Trials:

Table 1 lists all replicated entries by tuber type, alphabetically, and their respective No. 1 yields, specific gravity and tuber quality rating at the several testing locations. A total of 50 russets, 37 reds, 34 chippers, 4 long whites and 7 specialty types were grown in one or more locations.

Two trial locations were used in Kern County. At one, russets, long whites, reds and specialty varieties were grown; at the second, the national Snack Food Association chip trials and the UC-CPRAB chip trials were grown. The average total and No. 1 yields, respectively, in the replicated yield trials for 40 russets were 480 and 385 cwt./A, for 33 reds were 470 and 390 cwt./A, for 4 long whites were 585 and 435 cwt./A, for 6 specialty types 495 and 390 cwt./A, for the 13 SFA chip trial entries were 490 and 450 cwt./A, for 17 other chipping entries were 560 and 515 cwt./A. A two rep chipping trial with 4 Atlantic seed sources and 5 other entries had an average total yield of 510 cwt./A and total No.1 yield of 475 cwt./A. A replicated trial of true seed selections from TPS Inc. had average total yield of 400 cwt./A and total No. 1 yield of 315 cwt./A.

The top yielding russets in Kern County were **AC83064-1, CO86051-3, CO86153-2, AO84078-1, CO86030-1, Russet Norkotah (Alberta), AC83068-1, A81286-1 and A81386-1**. The russets with the highest marketability ratings were **AC83064-6, A81386-1, AO84078-1, NDO2904-7, AC83064-1, Russet Norkotah (Alberta) and Russet Norkotah (Oregon)**.

The highest yielding reds in Kern County were **Fontenot, NDO4001-2, MN13035 (Ruby Red), AD82706-2, ND1871-3, NDO2469-1, UCD-2R, A83359-5, NDA3003-1, Red LaSoda, and NDO3432-3**. The reds with the highest marketability ratings were **NDO2438-7, NDO2686-6, NDO3849-12, ND1871-3, NDO2469-1, and NDO2686-4**. Many of the

reds were over-mature at harvest time. The entries with the highest percentage of small tubers were NDO2686-10, NDTX8-731-1, CO86142-3, NDO4030-12, NDO2686-6, ND1871-3, MN13035 (Red Ruby), and NDO4001-2.

Only four long white entries were included in the replicated trials. White Rose had the highest total yield, but was third in No. 1 yield. ND2050-1 had the highest No. 1 yield; AD84087-1 had the highest percent No. 1's and the highest marketability rating.

Six specialty types were included in Kern County replicated trials. Brigus (round purple with light yellow flesh) was the highest yielder, followed by Rose Gold and Delta Gold. Neither was rated highly for tuber quality, however; the highest quality tubers were Yukon Gold, G742-4X (round yellow), and Delta Gold.

The highest yielding entries in the Snack Food Association trial were ND2676-10, AF875-15, Chipeta, and ND2471-8. All entries yielded well except ND2417-6. Tuber quality was generally good. Atlantic had the highest total defects, probably because it was over-mature. Others with excessive amounts of defects were ND2471-8 and Norchip. The least amount of defects were from Chipeta, NDO1496-1, ND2676-10, ND2417-6 and AF875-15. All had good or excellent Agron color, with AF875-15, BO178-34, Atlantic, ND2676-10, NDO1496-1, Norchip and NY102 all being over 70. Specific gravity was good for all entries, with Atlantic being the highest (1.099) and Norchip and ND2676-10 being the lowest (1.085). Of the 17 entries in the other replicated chipping trial, the highest yielding entries were Atlantic (Alberta), Chipeta, CO86106-4, and AC83306-1. Quality was generally good, with Atlantic exhibiting some hollow heart. Frito Lay provided chipping and color analyses. All had acceptable color with CO86106-1, ATX85404-8, BC0894-3, M39-4, E55-44, M111-2 and Norchip all being over 70. Specific gravity ranged from 1.089 (M39-4) to 1.063 (Ptarmigan).

At the Intermountain Research and Extension Center at Tulelake, two replicated yield trials were conducted. All Western Regional Trial entries, and some other advanced lines, were grown at two nitrogen fertilizer rates - normal

and approx. 60% of normal. Of 27 russets in these trials, 18 had higher total yield at the higher nitrogen rate; 21 had higher No. 1 yields. Of 21 red entries, 16 had higher total yields at the higher nitrogen rate; 16 also had higher No. 1 yields. With only one year of data, it would be inconclusive to look at individual varieties with respect to more desirable nitrogen rate.

At Tulelake, the russet entries averaged 530 and 450 cwt./A, respectively, for total and No. 1 yield, in the nitrogen rate experiment. In a separate replicated trial, all with "normal" nitrogen rate, the respective yields were 575 and 520 cwt./A. The highest yielding russets at Tulelake were Century Russet, AO85165-1, AC83064-1, A84118-3, A83115-12, A83033-5 and AO84078-1, in the nitrogen trial, and AC83068-1, A81286-1, CO86058-1, CO84074-2, and A86102-6 in the other replicated trial. The entries with the highest marketability ratings were NDO2904-7, A81386-1, AC83064-6, A84118-3, Russet Norkotah and A84180-8. Quality was generally good, with some entries showing hollow heart susceptibility - NDD840-1, NDD2629-1, AO84275-3, AO84078-1 and A84118-3.

At Tulelake, the red entries averaged 530 and 495 cwt./A, respectively, for total and No. 1 yield in the nitrogen rate experiment. In the replicated trial at only one nitrogen rate, the respective average yields for 16 entries were 570 and 530 cwt./A. The highest yielding reds, in the nitrogen rate trial, were AD82705-1, A84662-1, AD82706-2, and A82705-1. The entries with highest marketability ratings were NDO2686-6, NDO3994-2, ND1871-3, COO86107-1 and Fontenot. Many of the reds skinned at harvest and/or subsequently showed considerable shatter bruise. Many also had some "bronzing" over the red color. Entries with hollow heart susceptibility were NDTX8-731-1, Red LaSoda, and to a lesser extent, ND1871-3 and A83359-5. Six specialty varieties were grown at Tulelake.

At Santa Maria, 13 russets and 3 reds were grown. Yields were very high, the highest being 940 cwt./A total yield for AC83064-1. Other top yielders were Lemhi, Red LaSoda and Century Russet. The average yields for total and No. 1 were 725 and 615, respectively. Quality was generally good, with NDO2904-7. Lemhi Russet, and Century Russet having the highest

percent No. 1's. Red La Soda and Russet Burbank showed severe hollow heart. Lemhi and NDD840-1 had blackspot. AD83206-1 had severe growth cracks and knobs.

In Humboldt County, 11 chipping entries, 2 reds, 1 yellow, and 2 russets were grown. In addition, two soil amendment treatments were compared on the standard Kennebec variety. Compost resulted in the highest total yield, 455 to 385 cwt./A, but a lower percent No. 1's, 89 to 97%. Within the variety trial, the highest yielding entries were AC83306-1, Chipeta, ATX85404-8, and Russet Burbank. The average total and No. 1 yields were 390 and 345, respectively. The specific gravity levels were very high, even higher than normal for this high gravity area; the average was 1.100, the highest being 1.105 by Atlantic, Yukon Gold and ATX85404-8. Russet Norkotah had the highest fresh market rating. AC83306-1, the highest yielding variety, had severe vascular discoloration, as did AD82705-1. AC83311-2, had severe hollow heart. Irish Cobbler and Red LaSoda showed definite late blight symptoms on the vine and tubers.

All Tulelake, replicated trial entries were placed into storage after harvest and evaluated at 60, 120 and 180 days, for turgor, rot, sprouting, shatter bruising and weight loss/shrink. The best storing russets were A80373-17, A81386-1, AD82162-3, AO83037-10, NDD840-1, Russet Burbank and Russet Norkotah. Very poor storing russets included A84095-1, B-180-18, NDD2629-1 and ATX84278-1. The best storing reds were Sangre, ND1871-3, Cherry Red, NDO2438-7, and NDO2686-6. Poor storing reds included AD81560-4, NDA3003-1, NDO3573-5, UCD-1R, NDO3503-5 and A82705-1.

Observation Trials:

Table 2 lists the entries of early and intermediate generation selections, which were grown in Kern County and Tulelake. They included 2x27 hill, 1x27 hill, and a few 1x12 hill and 1x5 hill. Only a few entries were selected at both locations. These include the russets A86093-13, CO87062-5 and CO87062-6, the reds A88475-4 and NDO4333-1, and the long white TXA1516-3. This is the second consecutive year that these russets and white have been selected at both locations. A total of 19 russets were selected at

Kern County and 22 at Tulelake. Eleven reds were selected at Kern County and 7 at Tulelake. Six chippers were selected at Kern County; one additional long white was selected at Tulelake. Two new yellow fleshed specialty types, developed by Carlos Quiros at UC Davis, were selected in Kern County.

California Table 1a. Summary of No.1 Yields and Tuber Quality of Standard and Potential Varieties

Averaged Over Locations								
Variety	Kern	IREC	Humbolt	Santa	Adj.Dev.	Specific	Tuber	
				Maria	From Mean	Gravity 1	Rating 2	Notes 3
A. Russet								
A81286-1	459	639			118	91	2.7	SK, KN, Sl.MS, sl.RH & GC, IR
A81386-1	449	492			39	86	4.0	MS, GC, KN, sl.Rot, sl.VD, sl.ID, sl.BS
A83033-5	229	510			-62	82	2.7	sev.GC & KN, MS, sl.BS
A83090-3	339	525			1	87	4.0	GC, KN, HH,IN, sl.BS, sl.PE
A83115-12		520			43	74	3.4	SK, Big, Wht. eye
A84095-1	408	436			-9	88	3.3	KN, MS, Rot, HH, Wht. eye, sl.BS
A84118-3	396	535			34	93	3.4	MS, GC, Rot, HH, sl.BS
A84180-8	193	481			-94	82	3.2	sev.GC, KN, MS, sl.HH
A84458-9		486			8	94	2.9	sev.AH, sl.SK, HH
A86011-8		399			-79	84	3.8	sl.SK
A86011-16	300				-85	84	4.1	GC, EL, HH, sl.VD, sl.IN
A86102-6		559			82	97	4.0	White eye
AC78069-17	402	534		653	46	87	2.9	MS, RO, KN, PE, AH, sl.ID, White eye
AC82359-1		400			-78	95	3.5	SM, Smooth, sl.HH & SER
AC83064-1	602	554		821	175	77	3.6	HS, MS, RH, Rot, sl.IN, sl.SK, HH
AC83064-6	388	424		637	-1	80	4.1	MS, KN, HH, , GC, GN
AC83068-1	466	665			134	78	3.3	Pinkeye, RH, HH, IHN, sl.IN, GC
AC84028-4	343	426			-47	82	4.0	EL, sl.IN
AC84487-1	324	458			-40	86	3.7	EL, sev.GC, HH, SER
AD83011-5	360	400			-51	88	3.9	MS, sl.Rot, sl.BS, White eye
AD83206-1	80	343		415	-204	90	1.9	sev.MS & KN, GC, HS, HH, sl.VD, sl.BS
AO80432-1		373			-105	95	3.1	sl.SB & RH & SM, HH
AO84078-1	475	506			59	89	3.5	sl.IN, sl.BS, AH, GC, RO, sev.HH
AO84275-3	425	401			-18	87	3.0	sev.KN, MS, GC, HH, sl.IN, sl.BS
AO85165-1	403	560			50	84	3.5	GC, RH, RO, HH, sl.VD
ATX1229-2	387				2	78	4.1	MS, sl.Rot, sl.HH, sl.VAS
ATX84706-2	427				43	81	2.8	Rot, EL, MS, sl.BS
Century Russet		721		774	214	88	3.7	Vry.SH, sl.SK, Big, sl.KN & GC & GN, BS
CO80011-5	430	467		659	35	78	3.6	GC, MS, Rot, sl.IHN, FL
CO81082-1	382	437		411	-74	80	3.5	MS, EL, RH, Rot, sl.HH, IN
CO82142-4	389	452			-11	87	3.2	sev.EL, AH, GC, RH, sl.HH, sl.IN, sl.SER
CO84074-2	386	571			47	76	3.7	Rot, EL, HH, SK, Big
CO85026-4	309	545			-4	90	3.5	KN, EL, Rot, MS, sl.SB, HH
CO86030-1	472	555			82	86	3.2	MS, Rot, SO, HH, SK
CO86051-3	482	462			40	81	3.3	MS, Rot, GC, PE, MS, SK, HH, VD
CO86058-1	433	616			94	79	3.8	sl.SER, sl.SK, Big, Wht. eye, HH
CO86153-2	481	537			78	92	3.6	sl.KN, Rot, EL, HH, IN
COO8390-1		473			-4	90	3.0	SM, PE
HG23-72		510			32	92	3.2	RH, PE, Wht. eye
Irish Cobbler			237		-84	102	3.0	RZ, SM, SL.Lt.Blt., sl.VD & SER
Lemhi	436			801	132	92	3.8	MS, EL, GC, RH, HH, BS, sl.KN & GN

M-12		412		-65	93	2.2	RH, PE, sl.GC, HH	
M-15		371		-107	90	2.5	MS, sl.GC	
NDD2629-1	334	370		-79	81	3.1	MS, KN, HH, sl.IN, SK, Irr.shape	
NDD837-2		435		-43	81	2.8	PE, SM, sl.SK, HH	
NDD840-1		423	528	-58	80	3.7	sl.SK, sl.PE, Soft, sev.HH, GC, BN, MS, sl.GN	
NDO2904-7	438	484	508	-7	77	3.9	sl.VD, sl.BS, sl.AH, vary RU, HH	
Ranger Russet	432	425	558	-12	88	2.8	KN, PE, LO, sl.BS, GC, MS, HH	
Ru. Burbank	206	348	402	-76	95	2.2	sev.KN & MS, Rot, sl.HH, sl.VD, sl.BS, GC	
Ru. Norkotah	416	304	323	-31	86	4.1	sl.VD, sl.IN, sl.IHN, KN, Wht. eye	
Sierra	354	435	604	-19	77	4.0	GC, MS, RH, sl.IN, KN, Wht. eye	
Average	385	478	320	588	86	3.4		

1 1.0 Omitted

2 5 = Excellent, 1 = Very Poor

3 PE = Pointed ends, GC = growth cracks, KN = knobs, EL = enlarged lenticels, RH = rough, MS = misshapened, SC
IR = irregular shape, SK = skinned, SM = small, SO = smooth, SH = shatter bruise, RZ = Rhizoctonia, HS = heat sp
AH = alligator hide, VD = vascular discoloration, IN = internal necrosis, SER = stem end rot, IHN = internal heat nec

California Table 1b. Summary of No.1 Yields and Tuber Quality of Standard and Potential Varieties

Variety	Kern	IREC	Humbolt	Santa Maria	Adj.Dev. From Mean	Averaged Over Locations		
						Specific Gravity	Tuber Rating	Notes
B. White								
AC83306-1	622		446		127	91	3.7	MS, sev.SK, PE, KN, sl.ID, RZ, sev.VD
AC83311-2	453		331		-15	95	3.7	SM, sl.Rot, SK, sl.GN, SC, RZ, SM, sev
AD84087-1	427				-48	85	3.5	KN, GC, VD, IHN
AF875-15	555				80	87	3.8	KN, sl.GN, VD, sl.BS
Atlantic	443		300		-36	102	3.8	sl.SER, HH, sl.SC, sl.SB, IB
Atlantic-K	694				219	94	4.4	SK, GN, HH
Atlantic-OR	574				99	86	4.5	sl.GN
ATX85404-8	550		400		68	95	3.8	RZ, sl.SC, sl.VD
BCO894-3	520		235		-29	83	4.1	SM, sl.SER
BO178-34	496				21	96	4.3	sl.SK, sl.ID
Chipeta	692		426		152	94	4.0	Big, sev.SK,sl.GC, , sl.RZ & GN
Chipeta	522				48	94	4.3	SK
CO86106-4	674		380		120	86	4.0	SK & GN, sl.SER, sl.GC, RZ, sl.VD
E55-44	477				3	81	4.3	SM
G742-4X	271				-204	79	4.2	Rot
Kennebec			380		41	102	3.8	GN, sl.VD
L8-18	508				34	76	3.6	GN, PF, sl.ID
M111-2	333				-142	72	4.1	SM, sl.ID, sl.HH
M39-4	497				22	94	4.0	SK, sl.GN, sl.ID, sl.HH
ND2050-1	486	569			-3	80	3.0	1VD, 1SEB, 1IN, SK, RH
ND2417-6	221				-253	89	4.0	SM
ND2471-8	520				45	94	4.5	sl.SK
ND2676-10	573				99	85	4.5	sl.GN, ID, sl.VD, sl.HH
NDA2031-2	475				0	92	3.3	sev.SK, GN, Stolans, sl.SER
NDA2031-2	342				-132	97	4.0	sev.SK, Stolans
NDO1496-1	370		261		-92	93	4.1	sl.MS, SM, sl.SK, sl.VD
NDO1496-1	362				-113	86	4.4	sl.SER
Norchip	368				-107	80	3.5	KN, GC, PE, SK
Norchip	464				-11	85	3.8	GN, Vary, sl.VD, sl.HH
NY102	394				-81	95	4.2	sl.GN
NY99	482				8	83	3.8	sev.SK, sl.GN, sl.IN
Ptarmigan	454				-20	67	3.9	PE, VD
Shepody	397				-77	82	2.9	KN, MS, EL, Rot, HH, VD, SER
Suncrisp	483				8	94	4.4	0
Sunrise	491		328		2	84	4.0	sl.GN, sl.HH, SM, sl.VD
White Rose	427	602.6	247		-41	88	3.0	MS, Sv.KN, GC, ID, sev.PE, RH, VD
Average	475	586	339			88	3.9	

California Table 1c. Summary of No.1 Yields and Tuber Quality of Standard and Potential Varieties

Variety	Averaged Over Locations					Specific Gravity	Tuber Rating	Notes
	Kern	I REC	Humbolt	Santa Maria	Adj.Dev. From Mean			
C. Red								
A82705-1	418	552			80	77	3.7	IS, sl.BZ, sl.HH
A83359-5	473	350			6	70	2.6	Ru, KN, HH, sl.IHN, SK, sl.IN, sl.Rot
A84662-1	396	557			72	79	3.4	MS, GC, Rot, sl.BS, sl.HH, sl.IN & SK, BZ
AD82706-2	507	556		670	66	77	3.8	Rot, Bright red, SK, BZ
AD82745-1	284	580	380	663	-168	85	3.5	GC, MS, Rot, VD, SK, Big, BZ, HH
CO86142-3	405	595			95	84	3.9	GC, sl.Ru, PE, Rot, sl.SK, sl.BZ, SB, VD
CO86218-2	399	365			-23	80	3.3	GC, RH, Rot, sl.HH, sl.VD, , PE, BZ, Pur.
COO86107-1	386	354			-35	82	4.0	sl.Rot, sl.IN, sl.BZ & SK, Purple, sl.HH
COTX85404-8	390	464			22	81	3.0	MS, Rot, Big, sl.HH, sl.ID, SK, BZ, Bright,
DT6063-1	365				-27	83	4.0	sl.HH, sl.IHN, sl.IN, sl.BS
Fontenot	547	449			93	92	3.5	GC, Big, sl.BZ, SK, HH
MN13035	522	480			96	80	3.5	Ru, sl.HH, sl.IHN, sl.IN, BZ, Bright
ND1871-3	494	362			23	76	3.8	sl.Rot, sl.BS, Bright, sl.SK, HH
NDA3003-1	467	438			48	73	3.2	sev.GC, Rot, HH, sl.VD, sl.ID, sl.SEB, SK,
NDO2438-6	425	455			35	69	3.7	GC, sl.Rot, sl.SK, Big, HH
NDO2438-7	350	471			6	73	3.6	Rot, Big, HH, BZ, SK
NDO2438-9	220	261			-164	63	3.7	sl.Rot, sl.HH, sl.VD, sl.ID, BZ, SK, sl.GC
NDO2469-1	491	381			31	84	3.7	GC, sl.AH & Ru, sl.HH, sl.IN, BZ
NDO2686-10	329	357			-62	69	3.8	Rot, SK, GC, sl.HH
NDO2686-4	227	202			-190	77	3.7	MS, Rot, BZ, sl.SK, SB
NDO2686-6	258	291			-131	82	4.3	SO, sl.BS, Unif,sl.SK, sl.BZ, SM
NDO3432-3	452	696			169	77	2.8	MS, EL, Rot, Ru, SK, Big, sl.HH
NDO3504-3	356	451			-1	83	2.9	sev.GC, Rot, sl.IB, SK, BZ
NDO3846-3	263	230			-159	71	3.9	GC, Rot, Bright, Pur.
NDO3846-7	255	276			-139	73	3.6	SM, Rot, sl.VD, sl.IN, SK, HH
NDO3849-12	314	350			-73	72	3.5	sl.Rot & MS, sl.BS, sl.BZ, sl.SK
NDO3994-2		224			-194	76	3.8	Unif., BZ, SM, sl.SK
NDO4001-2	529	301			10	83	4.1	sl.GC, sl.BZ, sl.SK & VD, HH, sl.MS
NDO4030-12	410	388			-6	80	3.8	MS, Rot, sl.SER, sl.SK, sl.SB, Pur.
NDO4232-1		278			-139	77	3.8	sl.SK, SM
NDO4300-1		430			12	75	4.0	SB, SM, Bright
NDO4323-2		441			23	81	3.6	BZ, Bright
NDO4333-3		544			126	77	3.6	SK, SB, BZ, sl.VD
NDTX8-731-1	383	454			14	73	3.4	MS, Rot, HH, Pur.,sl.SK, BZ, Big
Red LaSoda	455	488	391	825	-145	82	3.1	MS, GC, sev.HH, sl.IHN, sev.IN, RH, sl.S
Sangre-14	281	421			-54	77	3.0	GC, Rot, sl.VD, sl.BS, , BZ, Dull, HH
UCD-2R	485	553			114	92	3.6	IRR, EL, sl.BS, SK, sl.HH
Average	392	418	385	720		78	3.6	

California Table 1d. Summary of No.1 Yields and Tuber Quality of Standard and Potential Varieties

Variety	Kern	IREC	Humbolt	Santa Maria	Adj.Dev. From Mean	Averaged Over Locations		
						Specific Gravity	Tuber Rating	Notes
<u>D. Specialty</u>								
B141	W/P		465		-35	99	2.9	Big, RH
Brigus	P	451	685.2		111	83	3.2	GC, Rot, Big, HH, IHN, IN, BZ
Delta Gold	Y	412	574.4		37	81	3.6	KN, MS, GC, HH, sl.IN, sl.SER
G742-4X	Y		364.5		-135	89	3.9	Uniform
Red Gold	R/Y	373	496.2		-22	84	3.1	sl.Rot, BZ
Rose Gold	R/Y	454	413.7		-22	83	3.0	MS, Rot, sl.HH, sl.IHN, sl.IN, Bright Yello
Yukon Gold-	Y	375		247	-19	93	4.3	Rot, sl.VD
Average	SP	413	500	247		87	3.4	

California Table 2a. Selections from Non-Replicated Observational Plots

Variety	1993 Source	Selected*		Variety	1993 Source	Selected	
		Kern Co.	IREC			Kern Co.	IREC
<u>A. Russets</u>				<u>A. Russets</u>			
A86093-13	IREC	K-27	T-27	AC88070-3	CO	K-12	
A86102-6	IREC	K-27		AC88071-5	CO	K-12	
A8707-16	ID		T-12	AC88162-4	CO	K-12	
A87140-5	ID		T-12	AC88289-2	CO	K-12	
A8905-3	ID		T-12	AD83071-2	IREC		T-27
A8912-1	ID		T-12	AD85369-1	Delta		T-27
A89127-4	ID		T-12	AD87070-4	Delta		T-27
A89128-2	ID		T-12	AD88162-1	IREC		T-27
A89129-5	ID		T-12	AO80432-1	IREC	K-27	
A8914-4	ID		T-12	ATX1229-2	OR		T-27
A89797-5	ID		T-12	CO87062-5	CO	K-12	T-12
A89808-2	ID		T-12	CO87062-6	CO	K-12	T-12
AC82359-1	CO	K-12		CO87090-5	CO	K-12	
AC82363-3	CO	K-12		CO88043-3	CO	K-12	
AC84381-1	CO	K-12		COA89015-1	IREC	K-27	
AC84437-2	CO	K-12		COA89115-3	ID		T-12
AC87084-3	CO	K-12		COA8926-4	ID		T-12
AC87123-4	IREC		T-27	NZA8903-3	ID		T-12
AC88015-1	CO	K-12		TC1412-5	CO	K-12	

* K-27 = Kern County 27 Hill Trial

T-27 = IREC Tulelake 27 Hill Trial

K-12 = Kern County 12 Hill Trial

T-12 = IREC Tulelake 12 Hill Trial

California Table 2b. Selections from Non-Replicated Observational Plots

Variety	1993	Selected	
	Source	Kern Co.	IREC
<u>B. Red</u>			
A88475-4	IREC	K-27	T-27
NDA4146-2	IREC		T-27
NDC4030-1	CO	K-12	
NDO3849-1	Delta		T-27
NDO3994-2	OR, PB	K-27	
NDO4232-1	OR, KFS	K-27	
NDO4300-1	OR, KFS	K-27	
NDO4323-2	OR, KFS	K-27	
NDO4333-1	OR, KFS	K-27	T-27
NDO4578-1	OR, KFS	K-27	
NDO4578-1	OR, KFS		T-12
NDO4592-3	OR, KFS		T-12
NDO4615-1	OR, KFS	K-27	
NDO4625-12	OR, KFS	K-27	
NDO4654-1	Delta		T-27
NDO4784-2	OR, KFS	K-27	

Variety	1993 Source	Selected	
		Kern Co.	IREC
<u>C. White</u>			
A8793-6	ID		T-12
AC88356-1	CO	K-12	
AC88431-3	CO	K-12	
AC88456-6	CO	K-12	
AC88459-4	CO	K-12	
AC88637-2	CO	K-12	
CO87106-5	CO	K-12	
TXA1516-3	IREC	K-27	T-27

<u>D. Yellow</u>			
89S496	UCD-Quiros	K-12	
89S497	UCD-Quiros	K-12	

COLORADO

D. G. Holm and J. D. Wick

Objectives

The major objectives of the Colorado breeding program are: (1) to develop new potato cultivars (russets, chippers, and reds) with increased yield, improved processing and fresh market quality, resistance to diseases and pests, and tolerance to environmental stresses; (2) to provide a basic seed source of selections to growers for seed increase and commercial testing; and (3) to evaluate promising selections for possible seed export.

Breeding Program

Fifty-four parental clones were intercrossed in 1994. Seeds from 156 combinations were obtained. Eighty seedling families were grown in the greenhouse producing 26,007 tubers for initial field selection in 1995. Surplus tubers will be distributed to Idaho, Minnesota, Oregon, Texas, and Alberta, Canada.

Seedling tubers were obtained from Dr. J. J. Pavék, USDA-ARS, Aberdeen, Idaho; Dr. J. Creighton Miller, Texas A&M, Lubbock, Texas; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; Dr. Gary Secor, North Dakota State University, Fargo, North Dakota; Dr. Kathleen Haynes, USDA-ARS, Beltsville, Maryland; and Dr. Robert E. Hanneman, USDA-ARS, Madison, Wisconsin.

Selection Program

A total of 71,212 first-year seedlings were planted with 592 being selected at harvest for further observation. Another 647 clones were in 12-hill, preliminary, and intermediate stages of selection. One hundred eighty-nine of these clones were saved at harvest for further evaluation. Thirty-two advanced selections were saved and contingent on additional evaluations will be increased in 1995. Another 210 selections were maintained for germplasm development, breeding, or other experimental purposes.

Advanced Yield Trial. Twenty-eight clones, 24 advanced selections and 4 cultivars, were evaluated in the advanced yield trial. Included in this trial are selections which have graduated from Regional Trials. Results on

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yield, grade, and processing characteristics are summarized in Tables 1 and 2.

Advanced russet selections in this trial that have been released to growers for evaluation or that show promise for release in 1995 are AC78069-17, AC83068-1, CO80011-5, CO81082-1, CO82142-4, and CO85026-4. Selection CO85026-4 will be evaluated in the Western Regional Trials in 1995. AC78069-17 has processing potential.

Additional advanced selections with exceptional yield and grade were AC82363-3, AC84437-2, AC87084-3, and CO86030-1.

Western Regional Trial. Twenty-two selections and six cultivars were grown in the Western Regional Trial in Colorado. Selections entered by Colorado were AC83064-1, AC83064-6, AC84487-1, and CO84074-2.

All of the Colorado entries are currently released to growers for evaluation and will be tested again in this trial in 1995. AC83064-6 and AC84487-1 have shown some processing potential. Results of this trial are presented in the Western Regional Trial report elsewhere in this publication.

Western Regional and Advanced Chipping Trial. Trial results are presented in Tables 3 and 4.

Advanced selections and recently named cultivars that have shown considerable potential in this trial in the current or past years are AC83306-1 and Chipeta. Selection AC83306-1 will be discarded however because commercial trials showed potential for blackspot bruise.

Selection BC0894-2 was formally entered into the 1994 Western Regional Chip Trial. BC0894-2 is early maturing and shows some potential as a "cold" chipper. Other selections with good overall chip color were AC87313-3, AC88357-3, AC88456-6, ATX85404-8, and NDO1496-1.

Western Regional and Advanced Red Trial. Trial results are summarized in Table 5.

Selections in this trial originating in Colorado were CO86142-3, CO86218-2, and COTX86146-2. All will be reentered in the 1995 trial.

Few of the selections had yields greater (total and US #1) than Sangre-14. Selections with high total and US

#1 yield potential were A82705-1R, A83359-5, AD82745-1, COTX86146-2, and ND1871-3R.

Grower Tests. Table 6 summarized data over years for all selections that are currently undergoing grower evaluations. Nine russets and 1 chipper were evaluated by growers in 1994. As noted earlier AC83306-1 was discarded from further evaluation. All of the russets will be evaluated by growers again in 1995.

Selection CO85026-4 will be released for initial grower evaluations in 1995.

Russet Norkotah Selection Studies. The objective of this study is to determine if improvement in Russet Norkotah could be made through clonal selection for larger vines.

Forty clonal selections of Russet Norkotah were selected from two tuber-united certified seed lots in 1990. These selections were increased and evaluated for vine vigor in 1991 and 1992. Additionally another 10 selections were made from a seed lot at the SLV Research Center in 1991 and increased and evaluated for vine vigor in 1992.

Eleven of the original 50 clonal selections were retained for further evaluation in yield trials in 1993 and 1994. Nitrogen was applied at a rate of 140 lbs/acre both years. Significant differences were again observed among the selections for yield, grade, maturity and other growth characteristics in 1994. Table 7 summarizes the data on yield and grade.

Selections 2, 3, 4 and 8 had significantly greater total yields than clone 14, the standard Russet Norkotah from the SLV Research Center. Selections 3 and 8 had significantly greater US #1 yields than clone 14. Selections 3 and 8 have consistently performed better than the standard over the two years. Selection 2 tends to have a high yield of <4 oz tubers. Additional cultural management studies may be useful in maximizing the yield and grade of this selection.

Plantlets of selections 2, 3, and 8 have undergone virus clean-up and are currently being micropropagated by several Colorado seed growers.

Colorado Table 1. Yield, grade, tuber shape, and skin type for advanced yield trial clones - 1994.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC78069-17	426	368	86.4	205	36	Ob,Ru
AC82359-1	338	296	87.0	113	36	L,Ru
AC82363-3	470	425	90.4	171	38	Ob,Ru
AC83068-1	480	427	89.0	138	43	Ob,Ru
AC84437-2	456	409	89.7	164	24	Ob,Ru
AC87084-3	457	430	94.3	221	18	Ob,Ru
AC87123-1	343	289	84.1	106	44	Ob,Ru
AC87123-4	325	281	86.4	71	35	Ob,Ru
CO80011-5	388	323	82.7	112	44	L,Ru
CO81082-1	317	277	87.5	103	36	L,Ru
CO82142-4	347	322	92.8	171	16	L,Ru
CO85026-4	383	357	93.4	143	9	L,Ru
CO86030-1	476	443	93.1	248	27	L,Ru
CO86051-3	381	314	82.4	157	31	L,Ru
CO86153-2	398	320	80.2	114	45	Ob,Ru
CO87009-4	370	299	80.8	50	66	Ob,Ru
CO87062-5	343	301	87.4	167	16	L,Ru
CO87062-6	348	296	85.3	156	18	L,Ru
CO87090-5	401	365	90.8	207	26	Ob,Ru
CO87140-3	351	288	81.9	56	54	Ob,Ru
TC1406-1	397	332	83.6	85	64	L,Ru
TC1412-5	404	346	85.4	131	38	L,Ru
TX1216-1RU	311	235	75.4	52	73	Ob,Ru
TXAV657-27	397	321	80.9	103	68	L,Ru
Centennial Russet	287	236	82.2	47	43	Ob,Ru
Ranger Russet	411	369	89.2	209	24	L,Ru
Russet Norkotah	235	196	82.2	86	33	L,Ru
Russet Nugget	397	316	79.6	75	72	Ob,Ru
Mean	380	328	85.9	131	39	-----
LSD ² (0.05)	53	56	5.5	50	11	-----

¹Tuber shape & skin type: Ob=oblong; L=long; Ru=russet.

²LSD=least significant difference.

Colorado Table 2. Specific gravity, french fry color, and texture for advanced yield trial clones - 1994.

Clone	Specific Gravity	Fry Color ¹		Fry Texture ²	
		At Harvest	4 wks 50F+ 8 wks 45F	At Harvest	4 wks 50F+ 8 wks 45F
AC78069-17	1.080	1	2	3	3
AC82359-1	1.083	2	2	2	3
AC82363-3	1.092	2	2	3	3
AC83068-1	1.076	3	3	3	2
AC84437-2	1.085	2	3	4	4
AC87084-3	1.091	1	2	3	4
AC87123-1	1.080	2	3	3	3
AC87123-4	1.074	2	3	3	3
CO80011-5	1.068	3	3	3	3
CO81082-1	1.072	4	4	3	3
CO82142-4	1.080	3	4	3	3
CO85026-4	1.079	2	3	1	1
CO86030-1	1.075	2	1	4	4
CO86051-3	1.074	2	1	4	4
CO86153-2	1.075	1	3	3	3
CO87009-4	1.091	1	2	4	3
CO87062-5	1.073	1	1	3	3
CO87062-6	1.066	2	2	3	2
CO87090-5	1.068	2	2	4	3
CO87140-3	1.085	1	1	4	4
TC1406-1	1.084	1	2	4	4
TC1412-5	1.093	2	2	4	4
TX1216-1RU	1.071	4	3	3	3
TXAV657-27	1.081	2	2	3	3
Centennial Russet	1.075	4	4	2	2
Ranger Russet	1.078	2	2	2	2
Russet Norkotah	1.072	2	2	3	3
Russet Nugget	1.085	1	2	3	3

¹Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of ≤ 2 are acceptable.

²Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry, with 1 representing a soggy, wet texture.

Colorado Table 3. Yield, grade, tuber shape, and skin type for combined Western Regional and advanced chip trial clones - 1994.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC83306-1	476	395	82.9	128	43	R,W
AC87313-3	471	382	81.2	55	87	R,W
AC88356-1	450	377	83.9	181	36	R,W
AC88357-3	333	291	87.5	78	38	R,W
AC88431-3	336	268	79.8	105	44	R,W
AC88456-6	333	308	92.2	107	23	R,W
AC88459-4	335	256	76.4	87	78	R,W
AC88637-2	348	313	90.1	103	34	R,W
ATX85404-8	430	347	80.5	85	77	R,W
BC0894-2	363	332	91.5	135	26	R,W
CO87017-5	365	327	89.5	99	33	R,W
CO87106-5	409	330	80.7	89	72	R,W
ND01496-1	326	236	71.7	70	82	R,W
Atlantic	456	414	90.7	252	29	R,W
Chipeta	495	422	85.3	208	55	R,W
Norchip	361	297	82.3	127	33	R,W
Mean	393	331	84.1	119	50	----
LSD ² (0.05)	51	46	5.7	40	18	----

¹Tuber shape & skin type: R=round; W=white.

²LSD=least significant difference.

Colorado Table 4. Chip color¹ and specific gravity of combined Western Regional and advanced chip trial clones - 1994.

Clone	7 wks 40F	7 wks/40F +3 wks/60F	7 wks 50F	7 wks/50F +3 wks/60F	Specific Gravity
AC83306-1	3.5	1.5	2.5	1.5	1.092
AC87313-3	2.5	1.5	1.0	1.0	1.089
AC88356-1	3.0	2.5	1.0	1.5	1.088
AC88357-3	3.0	2.0	1.5	1.0	1.087
AC88431-3	3.5	2.0	2.0	2.5	1.078
AC88456-6	2.5	2.0	1.5	1.5	1.101
AC88459-4	3.5	2.5	2.0	2.0	1.087
AC88637-2	2.5	2.5	1.5	2.5	1.084
ATX85404-8	3.5	1.5	1.5	1.5	1.087
BC0894-2	2.5	2.0	2.0	2.0	1.075
CO87017-5	3.0	2.5	2.0	2.0	1.094
CO87106-5	3.0	2.0	2.5	1.0	1.093
ND01496-1	2.5	1.5	1.0	1.0	1.088
Atlantic	3.5	3.0	2.0	1.5	1.087
Chipeta	4.5	3.0	2.0	2.0	1.086
Norchip	4.0	3.5	2.0	2.5	1.077

¹Chip color was rated using the Snack Food Association 1-5 scale. Ratings of ≤ 2.0 are acceptable.

Colorado Table 5. Yield, grade, tuber shape, and skin type for combined Western Regional and advanced red trial clones - 1994.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type ¹
	Total	US #1			<4 oz	
		Total	%	>10 oz		
A82705-1R	474	426	89.8	178	44	R,R
A83359-5	549	514	93.6	222	28	R,R
AD82745-1	481	432	89.8	139	40	R,R
BC1145-1	328	237	72.0	55	78	R,R
CO86142-3	310	271	87.2	87	28	R,R
CO86218-2	364	329	90.3	148	32	R,R
COTX86146-2	434	353	81.9	156	33	R,R
ND1871-3R	430	370	85.8	94	53	R,R
NDC4069-4	336	291	86.5	119	30	R,R
NDO2438-7R	379	241	63.1	41	137	R,R
NDO2469-1R	321	254	79.4	106	39	R,R
NDO2686-6R	258	200	77.7	41	58	Ov,R
NDTX8-731-1R	263	229	86.6	121	28	R,R
Norland	307	266	86.6	90	32	R,R
Red LaSoda	427	391	91.7	215	23	Ov,R
Sangre-14	430	396	92.1	233	32	Ov,R
Mean	381	325	84.6	128	45	----
LSD ² (0.05)	51	52	6.9	35	18	----

¹Tuber shape & skin type: R=round; Ov=oval; R=red.

²LSD=least significant difference.

Colorado Table 6. Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 1994.

Clone	Usage ¹	Loc x Years	Total Yield (Cwt/A)	% US #1	Vine Maturity ²	Specific Gravity	% External Defects ³	% Hollow Heart ⁴
Russets								
C080011-5	FM	9	380	83.1	2.3	1.072	3.1	0.0
AC78069-17	FM/FRY	8	407	88.1	3.3	1.084	4.7	0.3
C081082-1	FM	8	339	85.5	2.1	1.075	0.7	0.5
C082142-4	FM	7	383	91.8	3.5	1.086	1.0	0.3
AC83064-1	FM	6	472	88.1	3.2	1.078	1.4	0.0
AC83064-6	FM/FRY	6	392	85.7	3.1	1.080	0.9	0.2
AC83068-1	FM	6	502	83.4	3.1	1.084	1.7	0.3
AC84487-1	FM/FRY	5	357	84.2	1.9	1.071	1.9	0.2
C084074-2	FM	5	401	81.6	2.8	1.073	1.5	0.1
C085026-4	FM	4	381	90.6	3.6	1.083	2.0	0.0
Centennial Russet	FM	26	302	78.5	3.0	1.082	1.0	0.4
Ranger Russet	FM/FRY	5	390	86.9	3.2	1.088	3.0	0.0
Russet Burbank	FM/FRY	21	379	65.2	2.8	1.086	9.0	1.4
Russet Norkotah	FM	15	280	82.6	1.3	1.075	1.8	0.1
Russet Nugget	FM/FRY	16	397	81.5	3.8	1.096	1.6	0.2
Chippers								
AC83306-1	CHIP	6	469	76.1	3.2	1.095	6.2	0.1
Atlantic	CHIP	8	407	86.5	3.3	1.098	1.4	2.2
Chipeta	CHIP	9	468	84.6	3.4	1.092	3.1	0.0
Norchip	CHIP	14	336	74.2	1.9	1.083	5.8	0.5
Snowden	CHIP	3	420	67.2	2.9	1.095	0.1	0.0

¹FM=fresh market, FRY=french fry.

²Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

³Includes defects such as growth crack, second growth, misshapen, and green.

⁴Based on tubers greater than 10 ounces.

Colorado Table 7. Yield and grade for Russet
Norkotah clones - 1994.

Clone	Yield (Cwt/A)				
	Total	US #1			<4 oz
		Total	%	>10 oz	
1	330	218	66.2	78	110
2	378	270	71.5	65	101
3	385	341	88.6	178	32
4	390	298	76.0	53	85
5	348	262	75.2	28	75
6	263	231	87.6	98	24
7	326	295	90.1	121	28
8	369	345	93.5	183	20
9	263	233	88.6	88	25
10	277	243	87.8	120	26
11	296	268	90.5	125	21
12 ¹	305	276	90.2	143	24
13 ¹	263	230	87.8	77	26
14 ¹	323	279	86.5	133	27
Mean	323	271	84.3	106	45
LSD ² (0.05)	44	48	5.3	46	16

¹Standard clones selected from grower lots. Clone 14 is from the SLV Research Center.

²LSD=least significant difference.

Florida

D. R. Hensel

Replicated Intermediate Potato Variety Trials

Objective of this test was to evaluate intermediate potato clones which are adapted to conditions in Florida. Potatoes were planted at the AREC Hastings research farm. Plots were 20 feet long. Seed pieces (2 oz.) were hand placed 8 inches apart. Rows were 40 inches apart. Clones were replicated 4 times. Soil type was Ellzey fine sand which is typical of Florida flatwoods. Potatoes were planted February 9 and harvested on May 19, 1994 (99 days after planting). Atlantic was the standard control variety.

Florida Table 1. Yield results from selected intermediate clones, AREC, Hastings, Florida, 1994.

Entry ¹	Yield (CWT/A)										Grand total	Specific gravity
	US1A					US1B						
	Total	1 7/8-2 1/2	2 1/2-3	Size (in.) 3-3 3/4	Over 3 3/4	1 1/2-1 7/8	Pick Outs (size A)					
Atlantic ²	407 a	163	187	51	6	15	7	429 a			1.078	
B0856-4	405 a	130	200	72	4	14	8	426 a			1.063	
B0564-9	399 ab	92	215	91	0	13	10	422 a			1.072	
AF1609-1	388 a-c	109	198	81	0	13	13	414 ab			1.066	
B0176-24	372 a-d	153	187	32	0	16	7	395 a-d			1.074	
B0178-30	364 a-e	179	170	15	0	16	8	388 a-f			1.077	
St. Johns	363 a-f	150	194	20	0	17	10	390 a-e			1.060	
Ptarmigan	359 a-g	264	94	2	0	30	7	396 a-d			1.064	
AF875-15	357 a-g	174	172	11	0	18	8	383 a-f			1.075	
B0717-1	356 a-g	292	61	3	0	47	3	406 a-c			1.073	
B0585-5	345 b-h	95	180	68	2	10	19	373 a-g			1.073	
AF1614-2	338 c-i	140	168	30	0	10	9	358 b-h			1.068	
AF1455-20	337 c-i	133	187	17	0	14	2	354 c-h			1.076	
B0763-15	336 c-i	111	203	22	0	14	3	350 c-h			1.073	
B0687-14	334 c-i	230	101	3	0	26	4	364 b-h			1.070	
AF1569-2	324 d-i	161	157	7	0	20	4	348 d-h			1.063	
B0684-5	320 d-i	83	170	66	0	8	2	330 f-h			1.061	
B0405-6	315 d-i	183	124	9	0	27	2	344 d-h			1.070	
AF1570-1	310 e-i	145	137	28	0	19	11	339 d-h			1.060	
AF1612-11	306 e-i	232	69	5	0	31	5	342 d-h			1.061	
B9922-11	304 f-i	124	168	12	0	8	2	314 h			1.076	
B0933-14	302 g-i	130	166	7	0	12	8	321 f-h			1.078	
B0810-7	288 hi	173	103	13	0	36	10	334 e-h			1.073	
B0405-4	281 ij	173	106	1	0	27	7	315 h			1.079	
B0887-5	232 jk	75	136	22	0	11	7	250 i			1.072	
AF1606-2	222 k	190	32	0	0	29	3	253 i			1.068	

¹ Source: B entries are from USDA Beltsville, MD. AF entries are from University of Maine, Presque Isle, ME.

Florida Table 2. Plant and tuber characteristics for intermediate clones AREC Hastings, Florida. 1994¹

Clone	Vine				Tuber	
	Type	Stand	Row cover	Maturity	App	Skin
Atlantic	7	97	8	3	5	5
B0856-4	6	98	8	4	7	5
B0564-9	5	97	8	3	7	4
AF1609-1	7	96	7	5	8	7
B0176-24	7	96	8	4	6	5
B0178-30	6	98	7	3	8	5
St. Johns	7	95	8	3	8	7
Ptarmigan	6	94	8	4	4	4
AF875-15	5	98	7	3	5	5
B0717-1	7	98	7	4	6	4
B0585-5	6	92	6	5	6	3
AF1614-2	5	94	6	6	7	7
AF1455-20	5	92	7	5	7	8
B0763-15	7	93	6	6	6	5
B0687-14	6	92	7	6	8	7
AF1569-2	5	93	7	6	9	8
B0684-5	5	94	7	5	4	4
B0405-6	5	90	6	5	8	7
AF1570-1	6	94	7	5	6	4
AF1612-11	5	95	7	5	6	4
B9922-11	6	96	7	6	5	8
B0933-14	5	95	7	5	6	5
B0810-7	6	94	5	5	5	6
B0405-4	5	94	6	5	7	6
B0887-5	6	95	7	6	7	7
AF1606-2	5	94	7	5	9	8

- ¹ Vine type= 1, v. decumbent, 5 spreading, 7 upright, 9 v. upright.
Stand= % stand measured on April 18, 1994.
Row cover=3 50% ground covered, 5 75%, 7 90%, 9 100%.
Maturity=1 no senescence, 3 10%, 5 20%, 7 35%.
App=tuber appearance, 1 v. poor, 5 fair, 7 good, 9 excellent.
Skin=1 no skin, 5 medium skinned (50%), 9 100% skin intact.

Idaho

S. Love, A. Thompson-Johns, M. Ruby, J. Stimpson, J. Pavek, and D. Corsini

Replicated Variety Trials

Potato variety trials were conducted at Aberdeen, Kimberly, Parma, and Rexburg, Idaho. These trial locations represent a wide range of environments and conditions. Aberdeen, Kimberly, and Parma were experiment station sites, while the Rexburg trial was in a commercial production field. Rexburg is an area with a relatively short growing season (110 days) followed by Aberdeen (130 days), Kimberly (150 days), and Parma (160 days).

The trials were planted between April 14 and May 10. Harvest occurred between September 12 and October 14. Management practices were common to the respective growing areas and largely conformed to University of Idaho recommendations.

All trials were planted in a randomized complete block design with four replications. Plots consisted of single rows, twenty feet long, with the exception of the Parma trial, which had three row plots with the center row being harvested.

Following harvest, all plots were graded and weighed. Depending on the objectives of the trial, samples from each plot were

evaluated for blackspot bruise, shatter bruise, internal defects, specific gravity, french fry color, chip color, and/or dry matter yield.

Four of the eight trials were dedicated to evaluating dual-purpose russets and long white processing selections (Tables 1, 2, 6, 7). The trial in Rexburg had a combination of russets, long whites, chippers, and reds (Table 8). Two trials were used to evaluate chipping selections (Tables 4, 5) and one to evaluate selections for high dry matter yield (Table 3).

Several long russet selections have performed well in trials for the past two to five years. These include A8495-1, A81386-1, COO83008-1, A84180-8, A84118-3, and A81473-2.

A8495-1 generally produced yields in the 1994 trials that were similar to Russet Burbank (Tables 1, 2, 7, 8). It showed some distinct advantages over Russet Burbank at all trial sites, including a higher percentage of U.S. No. 1's, higher specific gravity, less hollow heart, and better fry color. A8495-1 produced long tubers with excellent appearance and good processing potential. This selection is a cross between A77182-1 (Atlantic x Lemhi Russet) and Russet Norkotah.

A81386-1 outyielded Russet Burbank at both Parma and Rexburg and had an exceptionally high percentage of U.S. No. 1 tubers (Tables 7, 8). This selection has shown a consistent ability to produce acceptably light colored fries following storage at 40°F. Some tendency for blackspot bruising was evident in the Rexburg trial. A81386-1 is a cross between A74341-4 and Ranger Russet.

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COO83008-1 is the result of an Oregon selection from a Colorado cross. In the 1994 trials it produced lower yields and larger tubers than Russet Burbank (Tables 7, 8). It had outstanding percentage of marketable tubers. Specific gravity and fry color scores were also excellent for this selection. COO83008-1 is a cross between Century Russet and WNC672-2 (seedling x Lenape).

A84180-8 consistently had the best appearing tubers of any entry in the 1994 trials. It produced yields that were similar to Russet Burbank in spite of earlier maturity (Tables 1, 2). Percentage of U.S. No. 1 tubers was very high, 89 and 88 percent in Aberdeen and Kimberly, respectively. In the Kimberly trial, this selection had significantly darker fry colors than Russet Burbank. A84180-8 is a cross of A7816-14 and Russet Norkotah.

A84118-3 consistently produced lower yields than Russet Burbank in 1994 (Tables 1, 2, 7, 8). The lower yields were offset by several positive traits including higher specific gravity, less hollow heart, less tendency for blackspot bruise, better fry color, and better gradeout. A84118-3 is a cross between two seedlings, A77236-6 and TND329-1Russ.

A81473-2 is a selection with tubers that are heavily russetted but somewhat shorter than desirable. It had higher yields in Aberdeen and slightly lower in Kimberly than Russet Burbank (Tables 1, 2). It had 94 percent U.S. No. 1 tubers at both locations. It also had a low propensity for blackspot bruise. A81473-2 is a cross between two Aberdeen seedlings, A75175-1 and A75188-3.

Three chipping clones showed strong potential in 1994. They were NDA2031-2, NDO1496-1, and ATX85404-8.

NDA2031-2 outyielded all standard varieties in every trial (Tables 4, 5, 8). As

in past years, it showed relatively small tuber size and high tuber set, medium specific gravity, and a consistent ability to chip directly from 40°F storage.

NDA2031-2 is a cross of Rosa and ND413-4. The male parent is of andigena derivation.

NDO1496-1 had yields similar to or lower than Norchip in 1994 (Tables 4, 5, 8). Historically, this selection has produced higher yields than Norchip and has been similar in maturity. It had relatively high specific gravity and better chip color than the standards. Shatter bruise was evident at Aberdeen and Rexburg (Tables 5, 8). NDO1496-1 is a cross of ND292-1 and A77268-4 (Lemhi Russet x Norchip).

ATX85404-8 is a Texas selection and was tested in Idaho for the first time in 1994. It outyielded all standard varieties except Chipeta (Table 4). This selection had better chip color than any of the standards and similar specific gravity as did Chipeta. ATX85404-8 is a cross of Gemchip and ND860-2.

All but one of the selections in the high dry matter trial had higher yield of dry matter than Russet Burbank and Lemhi Russet. A82360-7 and A8787-2 looked especially promising because they are attractive long russets in addition to being high in dry matter. These selections are being evaluated for dehydration purposes.

Sensory Evaluations

Four breeding selections were compared to Russet Burbank in sensory evaluation of baked tubers. The evaluation was conducted as a double blind test at the Bingham County Extension Office. Tubers were baked in a convection oven, then rated by trained panelists for color, texture, flavor, and overall quality. Evaluations were conducted within one month of harvest and again after five months of storage at 40°F.

There were no differences among the entries for color at either test date (Table 9). At harvest, A84118-3 had inferior texture, while after five months storage, A84180-8 was the worst for texture. Russet Burbank had the lowest flavor rating at harvest, while A84180-8 had inferior flavor following storage. Overall ratings followed this same trend.

COO83008-1 consistently had the best ratings for each of the sensory components as well as overall quality. Following storage, all selections except A84180-8 had overall ratings as good as or better than Russet Burbank. The sensory quality of A84180-8 appeared to decline over the storage period.

Metribuzin Screening

Twelve named varieties and 36 breeding selections were tested for response to the herbicide metribuzin (Sencor/Lexone). Evaluations were made on injury and vigor following a post-emergence application (on 8-12 inch plants) of 1.0 lb/A a.i. Yield loss for the treated plants was predicted using a model developed previously. Each variety and selection was assigned a relative susceptibility score based on yield loss.

Injury due to the herbicide was especially severe in 1994 (Table 10). Shepody and the red-skinned selection, COTX86146-2R, were completely killed in every treated plot. Several long white and russet selections were moderately to very susceptible including A84420-5, AC84487-1, and W1099. Two chipping selections, AC83306-1 and ATX85404-8, were very susceptible. The red-skinned selections, which historically are sensitive to metribuzin, showed a range of response from very susceptible to very resistant.

Disease Reactions

Potato breeding selections and cultivars were evaluated for their reaction to Verticillium wilt, early blight, and common scab under field conditions in Idaho. Two trials were planted in early May as randomized complete blocks. Both sites were sprinkler irrigated. Natural soilborne inoculum of V. dahliae and S. scabies occurred at both sites. Early blight spreader rows of highly susceptible cv. Pioneer were used at one site. Final foliar disease ratings were made on August 29. The season was unusually hot and dry. The test sites showed typical development of Verticillium wilt, but early blight developed more slowly than normal. Most of the breeding selections showed considerable improvement in Verticillium wilt resistance compared with the standard cultivars (Table 11). A83115-12, A81286-1, A82360-7, A87172-5, and AWN85540-1, showed high resistance to wilt and moderate early blight resistance. Russet Burbank giant hill selection M12 was much more resistant to Verticillium and early blight than the control. Many of the advanced breeding selections are more susceptible to common scab than Russet Burbank.

IDAHO TABLE 1. Advanced russet potato variety trial grown at Aberdeen, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score
		Yield	%	> 12 oz	6 to 12 oz	< 4 oz	U.S.No. 2		40°F	45°F	
	-----cwt/acre-----				----- % -----						
Russet Burbank	359	291	81	11	48	12	8	1.076	3.2	1.0	3.7
Ranger Russet	381	324	85	15	52	14	1	1.090	2.6	0.9	4.0
Lemhi Russet	355	305	86	24	43	14	0	1.087	2.0	0.4	3.7
A88118-3	459	418	91	44	38	7	2	1.087	2.2	0.6	4.0
A86102-6	439	408	93	25	55	7	0	1.085	4.0	1.7	4.3
A81473-2	405	381	94	35	50	6	0	1.089	2.1	0.5	3.0
A88246-2	396	309	78	24	40	14	7	1.080	3.8	1.0	3.7
A8495-1	395	312	79	3	42	20	1	1.088	3.5	0.6	2.7
A8792-1	385	354	92	32	46	6	2	1.097	2.0	0.3	3.7
A8815-3	379	345	91	28	49	9	0	1.084	1.5	0.6	2.3
A84180-8	379	337	89	19	57	6	6	1.075	3.5	1.1	4.0
A88108-7	361	307	85	29	38	12	3	1.087	2.2	0.4	4.3
A88250-1	354	280	79	13	40	18	3	1.091	3.2	0.5	3.3
A88107-3	351	316	90	22	52	9	1	1.082	2.5	0.6	2.3
A84118-3	339	258	76	6	41	24	0	1.096	2.5	0.4	3.0
A8825-4	281	202	72	1	37	26	2	1.095	2.9	0.8	2.3
Mean	376	320	85	21	45	13	2	1.087	2.7	0.7	3.4
LSD (.05)	36							.002	0.5	0.2	0.7

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 2. Advanced russet potato variety trial grown at Kimberly, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score
		Yield	%	> 12 oz	< 4 oz				40°F	45°F	
	-----cwt/acre-----										
Russet Burbank	635	508	80	18	12	1.081	3	2.8	2.5	1.3	3.5
Ranger Russet	557	496	89	29	5	1.091	0	3.3	2.9	1.3	4.0
Lemhi Russet	653	594	91	28	7	1.096	0	4.4	1.8	0.7	3.3
A86102-6	766	689	90	30	6	1.089	0	1.2	3.7	2.8	3.8
A8792-1	679	625	92	46	3	1.097	3	2.8	2.1	0.7	3.3
A81473-2	623	586	94	50	4	1.087	3	2.7	2.6	1.3	2.5
A84180-8	621	546	88	35	4	1.080	0	2.1	3.6	2.2	4.5
A8815-3	601	565	94	37	6	1.089	3	3.6	1.8	1.3	3.0
A88118-3	565	480	84	37	7	1.088	18	3.2	1.9	1.1	3.5
A8825-4	558	502	90	40	5	1.099	25	3.3	2.5	1.3	2.8
A84118-3	539	485	90	12	10	1.096	0	2.5	2.1	1.0	2.8
A88250-1	532	473	89	41	7	1.095	5	1.7	2.8	1.8	2.5
A88246-2	529	428	81	34	7	1.084	0	2.6	3.7	1.8	2.3
A8495-1	518	456	88	25	10	1.089	0	2.9	2.5	1.0	3.5
A88107-3	502	452	90	45	4	1.090	0	2.8	2.3	1.2	2.5
A88108-7	454	386	85	21	10	1.092	3	2.7	1.7	0.5	3.5
Mean	583	513	88	33	7	1.090	4	2.8	2.5	1.3	3.2
LSD (.05)	89					.004		0.5	0.6	0.6	0.8

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F until late February.⁴ Merit Score is based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 3. High dry matter potato variety trial grown at Aberdeen, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's		Culls & U.S.No. 2		Specific Gravity	Hollow ¹ Heart	Fry ² Color	Dry Matter Yield
		Yield	%	>12 oz	6 to 12 oz				
	-----cwt/acre-----				----- % -----		----- % -----		lb/A
Russet Burbank	338	267	79	14	43	1.074	0	1.0	6630
Lemhi Russet	321	270	84	23	41	1.085	0	0.5	6970
A8842-5	437	393	90	21	53	1.087	0	0.5	9710
A8787-2	369	299	81	4	49	1.103	0	0.4	9350
A82360-7	397	337	85	14	49	1.092	0	0.3	9230
A88345-2	405	356	88	27	47	1.088	0	1.0	9160
A8836-5	388	349	90	29	49	1.088	0	0.5	8750
A88245-8	365	310	85	9	49	1.092	22	0.7	8560
AWN84181-9	360	299	83	9	51	1.095	0	0.3	8560
A84420-5	315	246	78	2	38	1.109	0	0.3	8380
A88163-6	386	317	82	34	36	1.083	3	0.6	8320
A80559-2	323	281	87	17	50	1.103	0	0.4	8290
A8712-4	296	249	84	13	55	1.095	0	0.3	7080
A87172-5	263	224	85	11	50	1.086	17	1.0	5870
Mean	348	292	84	16	47	1.092	2	0.6	8090
LSD (.05)	42					.003		0.3	940

¹ Hollow heart was measured by cutting tubers > 12 oz.² USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.

IDAHO TABLE 4. Advanced chipping potato variety trial grown at Aberdeen, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's				Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Fry Color ³		Merit ⁴ Score	
		Yield	%	>12 oz	4 to 12 oz	<4 oz	U.S.No. 2				Feb45°F	Feb40°F		
														Recond. 65°F
-----cwt/acre-----														
----- % -----														

Chipeta	404	351	87	13	74	13	0	1.086	0	3.0	1.6	3.7	1.1	4.3
Gemchip	417	350	84	9	75	16	0	1.083	0	3.3	1.7	4.0	1.2	4.5
A87109-10	432	393	91	14	77	9	0	1.094	0	2.5	1.1	3.1	1.2	4.0
NDA2031-2	426	320	75	5	70	24	1	1.087	9	2.0	1.1	2.0	1.1	3.8
A80559-3	381	328	86	14	72	14	0	1.103	8	3.1	1.0	2.9	1.4	4.0
A88356-1	376	323	86	12	74	14	0	1.100	7	2.7	1.5	3.9	1.0	4.0
NDO1496-1	367	312	85	14	72	15	0	1.090	0	2.9	1.1	2.8	1.0	4.0
A88356-7	331	275	83	13	69	17	1	1.103	8	3.8	1.3	2.8	1.4	3.3
Mean	392	333	85	12	73	15	0	1.093	3	2.8	1.3	3.1	1.2	3.9
LSD (.05)	45							.005		0.5	0.3	0.5	0.3	0.9

¹ Hollow heart was measured by cutting tubers >12 oz.

² 1-5 scale with 1 = resistant, 5 = susceptible.

³ Chip color rated using the SFA color chart, 0-5 scale with 2 or less considered acceptable. Tubers stored at 40°F or 45°F. Tubers held at 40°F were also reconditioned for 3 weeks at 65°F.

⁴ Merit score is based on appearance and size of field-run potatoes, 1-5 scale with 5 = best.

IDAHO TABLE 5. Idaho location of the Western Regional chipping potato trial grown at Aberdeen, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's		Culls & U.S.No. 2	Specific Gravity	Hollow ¹ Heart	Blackspot ²		Shatter ²		Chip Color ³	
		Yield	%	<4 oz			Bruise	Bruise	Bruise	Bruise	40°F	50°F
	-----cwt/acre-----			----- % -----		----- % -----						
Atlantic	375	306	82	27	10	9	1.092	43	1.8	3.4	2.8	1.8
Chipeta	552	455	82	48	31	14	1.083	11	2.0	3.7	3.2	1.4
Norchip	364	223	61	3	36	21	1.075	5	1.9	2.8	3.9	2.2
AC83306-1	481	415	86	26	49	7	1.081	0	2.0	2.8	2.2	1.1
ATX85404-8	515	414	80	22	46	5	1.082	10	2.0	3.3	2.0	1.3
BCO894-2	309	238	77	4	46	1	1.076	0	1.5	3.1	2.4	1.6
NDA2031-2	598	438	73	11	47	10	1.078	0	1.5	3.0	1.7	1.3
NDO1496-1	360	290	81	12	49	2	1.088	3	1.8	3.8	2.1	1.1
Mean	444	348	78	19	43	9	1.082	7	1.8	3.2	2.5	1.5
LSD (.05)	87	88					.004		0.4	0.4	0.5	0.4

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ Chip color rated using the SFA chart on a 0-5 scale with 2 or less considered acceptable. Tubers were stored until early January at 40° or 50°F.

IDAHO TABLE 6. Idaho location of the Tri-state (Idaho, Oregon, Washington) russet potato variety trial grown at Aberdeen, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ² Bruise	Shatter ² Bruise	Fry Color ³	
		Yield	%	> 12 oz	< 4 oz					40°F	45°F
	-----cwt/acre-----			----- % -----			----- % -----				
Russet Burbank	476	311	65	8	11	24	23	3.6	3.8	4.0	0.9
Ranger Russet	409	347	85	14	10	5	0	4.1	3.5	3.0	1.0
A82360-7	481	365	76	25	11	13	0	2.5	2.9	2.0	0.6
A84420-5	423	328	78	9	17	6	0	2.5	3.3	2.3	0.3
A8712-4	443	317	72	22	9	19	0	2.9	3.4	2.4	0.3
A87172-5	416	340	82	28	11	7	13	3.7	3.1	2.6	1.3
AO84022-108	467	398	85	49	6	8	0	4.8	3.2	3.2	1.7
AWN85540-1	537	410	76	17	17	6	18	2.2	2.3	3.0	1.6
W1099	336	254	76	18	14	10	3	2.5	2.8	3.3	1.2
Mean	443	341	77	21	12	11	6	3.2	3.1	2.9	1.0
LSD (.05)	50	64					.004	0.5	0.4	0.7	0.5

¹ Hollow heart was measured by cutting tubers > 12 oz.

² 1-5 scale with 1 = resistant, 5 = susceptible.

³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 7. Russet and processing potato variety trial grown at Parma, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's			Culls &		Specific Gravity	Hollow ¹ Heart	Fry ² Color	Sugar ³ Ends
		Yield	%	> 12 oz	6 to 12 oz	< 4 oz				
	-----cwt/acre-----				%			-%-		-%-
Russet Burbank	739	389	53	11	30	12	1.076	53	1.6	95
Ranger Russet	854	708	83	39	34	5	1.093	0	1.0	71
Shepody	730	597	82	36	36	7	1.081	0	2.0	92
A8495-1	715	621	87	19	50	11	1.090	0	0.8	33
A81386-1	759	674	89	34	42	6	1.085	0	0.5	10
COO83008-1	689	621	90	56	28	4	1.091	3	0.7	44
AO82611-7	706	523	74	25	38	9	1.089	5	1.3	53
A81286-1	905	808	89	45	36	4	1.096	3	1.4	68
A84118-3	648	524	81	14	48	15	1.092	0	0.7	53
A84420-5	713	556	78	8	44	21	1.110	5	1.2	13
AO84275-3	667	524	79	12	46	16	1.102	0	0.8	33
Mean	715	566	78	25	38	11	1.090	3	1.1	53
LSD (.05)	110	100					.004		0.3	

¹ Hollow heart was measured by cutting tubers > 12 oz.² USDA fry grade score with lower score indicating lighter color; potatoes stored at 45°F.³ Percent of tubers producing fries with ends rated 3 + and at least 1 full point darker than the remainder of the fry.

IDAHO TABLE 8. Potato variety trial grown at Rexburg, Idaho in 1994.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow ¹ Heart	Blackspot ²		Shatter ² Bruise	Fry Color ³	
		Yield	%	>12 oz	6 to 12 oz			<4 oz	U.S.No. 2		Bruise		40°F	45°F
-----cwt/acre----- % -----												

¹ Hollow heart was measured by cutting tubers > 12 oz.² 1-5 scale with 1 = resistant, 5 = susceptible.³ USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 9. Sensory evaluations for baked potatoes made from tubers grown at Aberdeen, Idaho in 1994.¹

Clone	At harvest			After 5 Months Storage (40°F)		
	Color	Texture	Flavor	Color	Texture	Flavor
Russet Burbank	6.6 a	6.1 ab	5.8 c	6.6 a	6.3 b	6.0 b
COO83008-1	6.7 a	6.3 a	6.3 a	6.7 a	6.7 a	6.6 a
A81386-1	6.8 a	6.2 ab	6.1 ab	6.6 a	6.1 bc	6.1 b
A84180-8	6.6 a	6.0 b	6.1 ab	6.4 a	5.7 d	5.5 c
A84118-3	6.8 a	5.8 c	5.9 bc	6.8 a	5.9 c	5.9 b
						6.0 b

¹ Evaluations were made by trained panelists using double blind procedures. Approximately 100 tests were done on each clone. Each baked potato was rated for color, texture, flavor, and overall appeal. Ratings were made using a 1-9 scale with 9 = best. Means were separated using Duncan's Multiple Range Test, and means followed by the same letter are not significantly different.

IDAHO TABLE 10. Reaction of potato clones to the herbicide metribuzin.¹

Clone	Plant Injury ² 21 Days Following Application	Predicted ³ Yield Reduction Due to Injury ²	Relative ⁴ Susceptibility to Injury
----- % -----			
<u>Russet and Long Whites</u>			
Goldrush	55	34	MR
Ranger Russet	23	5	VR
Russet Burbank	35	18	R
Russet Norkotah	23	6	VR
Shepody	100	100	VS
A81386-1	45	30	MR
A82360-7	30	15	R
A8390-3	30	7	VR
A84118-3	8	0	VR
A84180-8	13	0	VR
A84420-5	80	56	MS
A8495-1	35	16	R
AC83064-1	63	41	MS
AC83064-6	65	42	MS
AC84487-1	73	51	MS
AO80432-1	45	22	MR
AO82611-7	60	35	MR
AO84275-3	25	10	VR
AO85165-1	8	0	VR
ATX84706-2Ru	13	0	VR
CO84074-2	50	34	MR
COO83008-1	28	9	VR
NDO2904-7	45	26	MR
TX1229-2Ru	15	0	VR
W1099	95	81	VS
<u>Chipping Selections</u>			
Atlantic	85	65	S
Chipeta	0	0	VR
Norchip	50	30	MR
Snowden	30	12	R
AC83306-1	94	100	VS
ATX85404-8	98	91	VS
BCO894-2	35	19	R
NDA2031-2	68	43	MS
NDO1496-1	65	40	MS
<u>Reds</u>			
Dark Red Norland	68	48	MS
Red Lasoda	50	28	MR
Sangre	28	10	VR
A82705-1R	75	53	MS
A83359-5R	83	64	S
AD82745-1R	48	32	MR
CO86142-3	65	35	MR
CO86218-2	15	0	VR
COTX86146-2R	100	100	VS
ND1871-3R	75	52	MS
NDO2438-7R	45	24	MR
NDO2469-1R	63	42	MS
NDO2686-6R	78	47	MS
NDTX8-731-1R	35	14	R

¹ Metribuzin applied postemergence (8-12 inch plants) at a rate of 1.0 lb a.i./A (17.5 gpa, 30 psi).

² Plant injury was recorded as the percentage of foliage from an average plant in each plot that showed typical metribuzin symptoms (chlorosis, necrosis, vein clearing, etc.)

³ Predicted yield reduction is expressed as percent loss compared to untreated plots and was calculated using the following equation: Yield reduction = $[1 - (1.142 + 0.176 (\log (\text{plant height treated} / \text{plant height untreated})) - 0.00796 (\text{plant injury}))] \times 100$.

⁴ VR = very resistant, R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible

IDAHO TABLE 11. Evaluation of potato breeding selections and cultivars for resistance to field diseases in 1994.

	Cultivar or Selection	Verticillium Wilt ¹	Early Blight ²	Common Scab ³
WESTERN REGIONAL TRIAL	A81386-1	3.0	5.5	1.9
	A8333-5	3.0	5.5	0.1
	A83115-12	2.0	5.5	0.0
	A8495-1	6.5	7.0	1.8
	A84118-3	3.0	5.0	0.1
	A84180-8	8.0	7.5	0.0
	AC83064-1	3.5	5.5	0.1
	AC83064-6	5.0	6.0	0.0
	AC84487-1	6.5	8.5	2.7
	AO80432-1	3.5	5.0	4.0
	AO8478-1	3.0	6.5	0.0
	AO84275-3	3.0	5.5	0.1
	AO85165-1	3.5	5.0	0.2
	CO84074-2	6.5	7.0	0.3
	COO8390-1	4.5	6.5	0.8
	M12	2.5	4.5	0.1
	M15	5.0	6.5	0.5
	NDO2904-7	6.0	7.5	0.1
	A81286-1	2.0	5.0	1.1
	A8390-3	6.5	8.0	0.1
	ATX84706-2Ru	7.5	8.0	3.4
	ATX1229-2Ru	7.5	8.0	2.9
TRI STATE TRIAL	A82360-7	1.5	4.0	1.2
	A84420-5	3.5	6.5	2.8
	A8712-4	4.5	6.0	0.0
	A87172-5	2.0	4.5	1.0
	AO84022-108	3.5	6.0	1.3
	AWN85540-1	1.5	4.5	2.9
	RBM13	7.0	7.5	0.1
	RBM161	7.0	7.5	0.1
	RBM166	5.0	6.5	0.1
	RBM170	7.0	7.0	0.1
	RBM366	6.0	6.5	0.6
	W1099	7.5	8.0	2.0
NAMED VARIETIES	Ranger Russet	4.5	6.0	1.6
	Russet Burbank	6.0	7.0	0.3
	Russet Norkotah	9.0	9.0	0.1
	Shepody	5.5	7.5	2.9
	LSD @ 5%	2.0	1.5	1.1

¹ Verticillium wilt 0 to 9 scale: 0 = none; 9 = >90% stems dead or dying with typical Vert. wilt symptoms.

² Early blight 0 to 9 scale: 0 = none; 9 = >90% leaflets with severe blight lesions or necrosis due to early blt.

³ Common scab 0 to 5 scale; 0 = none; TR = Trace; 5 = all tubers unmarketable due to scab.

MAINE

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University of Maine - Potato Breeding Project

Objectives: The development of new potato varieties of three types: 1. high-yielding, round, white, fresh market varieties with good table qualities and resistance to scab; 2. round white chipping varieties with high dry matter and low sugars, especially after long term cold storage; and 3. russet varieties with high yield and high dry matter suitable for french fry processing and fresh market.

Seed and seedling production. A total of 49 parent plants were intercrossed in 92 different combinations to produce 142,450 seeds. An additional 4,506,902 seeds were obtained from 84 field plantings. Greenhouse plantings of true seeds yielded 55,326 seedlings from which 39,804 "A" tubers and 9,451 "B" tubers were harvested.

Seedling selection. A total of 198 (0.8%) new selections were saved from 26,272 single hills. From the 333 12-hill plots, 110 (33%) were saved for further testing. Forty-six of 70 60-hill plots were selected, and 150 advanced selections were maintained and tested.

Disease tests. In cooperation with Drs. David Lambert, Richard Storch, Bill Brodie, Robert Goth, Gilbert Banville, John Wells, and Simeon Leach, a number of selections were tested for resistance to several diseases. All tests were inoculated either directly or on spreader rows within the plots. Results were as follows: 10 of 121 selections tested were resistant to late blight; 10/124 to acid scab; 25/97 to common scab; 39/144 to verticillium; 19/75 to golden nematode; 1/7 to *Fusarium roseum* 'Sambucinum'; and 3/33 to leafroll.

Physiological disorders. Additional tests for physiological disorders showed 10 of 40 resistant to hollow heart; 7/27 to blackspot bruising; and 5/39 to shatter bruising.

Chip tests. After processing in December and February, from five different storage temperatures, 13 entries had better average chip color than Monona: AF 1424-6, MaineChip, ND 860-2, AF 1452-28, AF 1668-60, AF 1668-62, CS 7232-4, AF

1424-7, Somerset, AF 1668-47, AF 1668-13, AF 1433-4, and AF 1668-58.

Processing and cooking tests. Terry Work (Food Sciences, University of Maine, Orono) conducted french fry tests of fifteen selections, and cooked quality tests for twelve selections from 1993 plantings. For french fry quality, seven selections were equal to the two checks in all qualities; two had poorer color and six were poor in texture. In the baked product tests, two selections were lower than the standards in overall acceptability; two selections were rated better than Superior in flavor, and one was worse than Katahdin in flavor and color.

Commercial Trials. Along with MaineChip, Portage, Prestile and St. Johns, ten numbered selections were grown on commercial farms in 1994 (AF 1060-2, CS 7232-4, AF 875-15, AF 1433-4, AF 1470-17, AF 1470-18, AF 1331-2, AF 1333-1, AF 1426-1, and CF 7523-1).

Chipping selections:

MaineChip (AF 875-16; AF 186-2 x AF 84-4) was named in 1991. It is a high dry matter, cold-chipping variety, with yields of marketable size equal to Snowden. Hollow heart has been a problem on occasion; and mosaic shows up late in this variety. Yields in Central Maine were very poor in 1994. Chip color was not very good early in the season, but was very acceptable in February.

AF 875-15, a sibling of MaineChip, has better yields than MaineChip and equal dry matter, but is not as good after cold storage. It is a good chipper from the field and does not show the heat necrosis that Atlantic does. Hollow heart is very rare, but there were several growth cracks in 1994. Tests in Virginia gave mixed results; the seed was obtained late in the spring, leading to immature plants and tubers sticking to the stolons at harvest. New Jersey and Pennsylvania results were promising.

CS 7232-4 (Wauseon x B 6503-5) is still being grown by one commercial chipping grower. It does have excellent chip color from storage, but yields and gravity are too low. It will probably never be named.

AF 1433-4 (AF 811-8 x CS 7232-4) is being tested commercially as a cold chipper. Its gravity is not high, and it has shows purple streaks, but yields are

fairly good.

Round white table varieties:

Portage (CS 7697-24; Raritan x BR 6831-5) is an early maturing variety with high yields and low gravity. It was named in 1992. Its advantage over Superior is better resistance to verticillium wilt and rhizoctonia. Disadvantages are susceptibility to scab and purple streaking, and skinning at harvest.

Prestile (CS 7635-4; BR 6293-12 x B 5421-3) was named in 1991. It is a late maturing variety with relatively high yields and dry matter. It has a nice appearance and will store late if given proper oxygen in storage. It is susceptible to heat necrosis and to black center in storage. Another disadvantage is shatter cracking or air cracking when given too much fertilizer.

St. Johns (AF 828-5; BR 6317-21 x CC 14-3a) is a late maturing variety with high yields and good disease reactions. It is resistant to golden nematode and the corky ring spot virus, and does well all along the east coast. Two commercial growers have had trouble storing it, but yields and quality were good. It has a good appearance washed.

AF 1060-2 (AF 431-9 open pollinated) has been named Mainstay. It is even slightly higher yielding than St. Johns, but is more susceptible to scab. It has also shown purple streaks on occasion. Commercial tests were very positive; several growers are pleased with it.

AF 1470-17 (CS 7589-8 x Portage) is a very high-yielding variety with good appearance and table quality. Problems seen so far have been hollow heart, purple streaks, and pressure bruising. One grower was very pleased; another found it misshapen.

AF 1470-18 is a sister to the previous selection. It did not yield as well this year.

AF 1331-2 (AF 584-1 x Portage) is an oblong white table variety with good size, appearance and yields. Seed should be suberized and knobby second growth can be a problem.

AF 1333-1 (AF 590-1 x Portage) is an early, high-yielding table selection. It was not impressive, and has been dropped because of hollow heart and heat necrosis.

AF 1426-1 (AF 637-1 x AF 564-2) is an early selection with yields equal to Superior and good table qualities. Growth cracks have sometimes been a problem. One grower was impressed in 1994, and results from Ohio were very favorable.

CF 7523-1 (BR 7089-6 x BR 6820-26) is an early to mid-season table selection with very white flesh, high yields, little hollow heart, and resistance to verticillium, early blight and wart. There has been some difficulty storing seed. Growers who tried this in 1994 were happy with the results.

Maine

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Introduction: Fifty-one potato varieties and clones were tested at Aroostook Farm, Presque Isle, Maine, as part of the NE107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast). The primary objective of this trial is to determine performance, quality, and storage characteristics of promising potato clones and new varieties in Maine.

Methods: Single-row plots, 25 feet long, were hand planted on May 19, 1994, using a randomized complete block design and four replications. The seedpiece spacing used for each line is listed in subsequent tables. Plots were located on two sites with Caribou loam soils typical of the area. On both sites the soil nutrient levels were medium-high to high, except for potassium which was medium. The soil pH was 5.0 on the site used for the early and medium maturing lines and 5.2 on the site used for russets and late maturing lines. Both sites were cropped to red clover and timothy hay during 1993 and oats during 1992. All varieties were fertilized with 1070 lbs/A of 14-14-14, banded at planting. The late and russeted variety experiments received an additional 40 lbs/A of nitrogen, sidedressed on June 30. Metribuzin (0.5 lbs ai/A) and paraquat (0.38 lbs ai/A) were applied on June 10 for weed control. Cultural practices were similar to those used on commercial farms in the area and varieties were grouped so that separate tests could be vinekilled and harvested based on maturity classification. Specific gravity was determined at harvest using the weight-in-air/weight-in-water method. Hollow heart ratings indicate the number of hollow tubers observed per 40 large tubers examined. Chip color evaluations were conducted from December 6-9, 1994, following storage at 50°F. Chips were fried at 350°F for three minutes and evaluated using an Agron M35, calibrated with the black "0" disk = 0 and the white "90" disk = 90. Chips were crushed and reported values are means from four replicates per variety. Each sample was read three times with thorough mixing between readings.

Results:

General Growth and Plant Stands.

All varieties produced excellent stands in these studies. May and June were quite wet and as a result, most varieties emerged slowly during 1994. AF1426-1, AF1481-4, and Yukon Gold emerged and developed particularly slowly, while Atlantic, Chipeta, Spartan Pearl, Superior, AF875-15, AF1438-5, AF1438-6, AF1470-17, B0257-12, B0635-6, MN12823, and

NYE55-35 developed quite quickly. Moderate chlorosis, apparently from the metribuzin application, was noted on June 15 on Spartan Pearl, Superior, AF875-15, AF1331-2, AF1438-1, AF1438-4, AF1438-5, AF1438-6, B0257-12, and B0564-8. AF1426-1 emerged late and did not show any metribuzin injury on June 15; however, the plants were quite chlorotic at the second rating, June 30. AF1481-4 did not display any metribuzin injury at the June 15 rating, but it became chlorotic by the end of June and remained so throughout the season.

Rainfall for May, June, July, and August totaled 4.52, 4.65, 3.17, and 1.26 inches, respectively. Only AF1424-7 and BelRus produced small plants with very poor ground cover. Plant size and ground cover ratings were also quite poor for Norchip, Spartan Pearl, AF875-15, AF1424-6, AF1452-28, AF1481-4, and B0613-2. Due to the dry August, yields were lower than usual during 1994 and specific gravities were higher than usual for most varieties. Very few foliar disease problems were observed during 1994.

Early Maturity Trial. AF1331-2, AF1438-4, AF1438-5, and AF1438-6 constituted the highest yielding group in the early maturity test (Maine Table 1). Marketable yields of AF1438-6 and AF1331-2 were highest in this test, but were not significantly higher than Superior. AF1424-6 produced significantly lower marketable yields than Superior. Norchip, AF1424-6, and AF1424-7 made up the lowest yielding group of lines in this test. Tuber size was quite small for most lines, particularly Norchip, AF1424-7, and AF1438-5. Only AF1426-1 sized reasonably well for table use. There were few external defect problems in these lines and no hollow heart was detected (Maine Table 2). The only serious incidence of an external defect was 6.2% deep growth cracks in AF1438-6. Superior, AF1331-2, and AF1424-6 tubers were the most uniform in appearance and most attractive. Chip colors from December storage were quite good for AF1424-6, AF1424-7, and AF1426-1. Specific gravities were quite high for all lines, but were highest for Superior, AF1424-6, and AF1424-7. Vine maturity ratings of AF1331-2, AF1424-6 and AF1426-1 reflected mid-season rather than early maturity.

Medium Maturity Chipping Trial. None of the test lines produced yields or marketable yields that were significantly higher than Kennebec or Atlantic (Maine Table 3). Yields of Snowden, B0245-15,

B0564-9, B0585-5, and B0635-6 were significantly lower than both standards. Only B0585-5 sized well for table use. Kennebec, B0172-22, and B0257-12 did not size exceptionally well during 1994, but they sized better than the remaining lines in this experiment. Tuber size of Snowden and B0564-8 was exceptionally small. External defects were not a problem in this experiment and only a few lines had any hollow heart (Maine Table 4). Atlantic and B0635-6 were the worst for hollow heart at 5% each. Tubers of B0245-15, B0585-5, NYE55-44, and NY87 were bright and attractive. Tubers of B0172-22 and NC012-18 were difficult to remove from the vines.

NYE55-44 and NY87 produced the lightest chip colors in this test. Chip colors of Kennebec, MaineChip, AF875-15, AF1433-4, B0172-22, B0245-15, B0257-12, B0585-5, and NC012-18 were very good and equaled or exceeded those of Atlantic. Chip color was quite poor for ND2471-8. Specific gravities of all lines were exceptionally high, although none exceeded those of Atlantic. Based on yields, tuber size and appearance, chip color, and specific gravity, the best chipping prospects in this test were NYE55-44 and NY87.

Medium Maturity Tablestock Trial. Only AF1470-17 produced total and marketable yields which were statistically equal to those of Kennebec in this test (Maine Table 5). Marketable yields of Spartan Pearl were lower than Kennebec and AF1470-17, but statistically equal to those of Atlantic. Yields of the remaining lines were quite low. None of the lines sized particularly well for tablestock use; however, Kennebec, Spartan Pearl, and Yukon Gold sized better than the others. None of the lines had high levels of external tuber defects in this trial and no hollow heart was detected (Maine Table 6). Tuber appearance ratings were quite good for Atlantic, Yukon Gold, AF1425-1, and AF1470-17. B0613-2 was relatively late maturing in this trial, while AF1425-1 and AF1438-1 were early maturing. AF1470-17 was the most promising tablestock line in this test; however, tuber size would have to be consistently better than that observed in this trial.

AF1438-1 produced exceptionally light chips and Kennebec, Atlantic, Spartan Pearl, AF1425-1, and B0613-2 also produced very good chip colors from December storage. Specific gravities were quite high for all lines in this test although none equaled those of Atlantic.

Late Maturity Trial. Only MN12823 produced yields and marketable yields which significantly exceeded those of Katahdin in this test (Maine Table 5). Other high yielding lines were St.

Johns, Chipeta, and AF1060-2. Chipeta, AF1452-28, and MN12823 sized well for tablestock use in this group, while tubers of NYE55-35 were very small. Only MN12823 had relatively high incidence of external tuber defects in this trial (Maine Table 6). Tuber appearance ratings for Katahdin, St. Johns, and AF1060-2 were quite good, while those of MN12823 and Chipeta were exceptionally poor. None of the tested lines had sufficient hollow heart to cause concern during 1994. Monona and AF1452-28 had mid-season maturity, while the other lines had late vine maturity.

Monona, AF1452-28, and NYE55-35 produced very good chip colors from December storage. Specific gravities of B0405-4 and NYE55-35 were 1.090 or higher, while those of Monona and MN12823 were relatively low. Chipeta displayed relatively high yield for a chipping line in this trial; however, its chip color was unimpressive and vine maturity was quite late.

Russet-Processing Trial. B0493-8 was the high yielding russet in this trial with total and marketable yields exceeding those of all other lines, including Russet Burbank (Maine Table 1). Total yields of Castile, Goldrush, and B9922-11 were statistically equal to those of Russet Burbank. Total and marketable yields of BelRus and AF1481-4 were very low. None of the lines produced sufficient large-sized tubers; however, B0493-8 had the largest tuber size in this test. Russet Burbank and AF1481-4 tubers were the most elongated in shape, while those of Castile were not well elongated (Maine Table 2). Incidence of external defects was quite high for B0493-8, but was not particularly of concern for the other lines and no hollow heart was detected in this trial. Tubers of Castile were white-skinned, while all other lines were russeted. Russetting on BelRus, Goldrush, and B0493-8 tubers was nonuniform. Tubers of AF1481-4 and B9922-11 were rated particularly attractive. Russet Burbank, Castile, and B9922-11 were quite late maturing, while Goldrush had mid-season maturity.

Only Russet Burbank had a specific gravity below 1.086. Fry colors from December storage were quite good for all lines except B0493-8. Based on yield and tuber size, B0493-8 was the best prospect for russet tablestock use in the 1994 trial; however, tuber appearance of this line was quite poor. B9922-11 remains a solid, dual-purpose performer with good tuber appearance; however, yields have not been outstanding in recent trials and tuber size has fallen short of expectations in some trials.

Storage Evaluations. Limited data on storage and processing characteristics were collected from 44 varieties and clones grown during the 1993 growing season (Maine Tables 7 and 8). French fry quality of seven selections was evaluated under simulated processing conditions (Maine Table 7). W1005Rus produced french fries that were rated better than Russet Burbank in quality when considering fry color, grayness, uniformity, and texture. Unfortunately, yields of this line have been inconsistent in Maine and it is very late in vine maturity with poor tuber type. French fries of B9922-11 were judged equal to Russet Burbank in quality. The remaining lines were inferior to Russet Burbank in overall french fry quality.

Chip colors from 50°F storage in February were acceptable for many lines with anticipated chipping potential (Maine Table 8). Lines with outstanding chip color from 50°F February storage were Norchip, AF1426-1, and NYE55-44 (early test); Atlantic, Chipeta, MaineChip, Snowden, B0178-34, and NY87 (medium trial); Monona, B0175-20, B0585-5, and NYE55-35 (late trial). MaineChip, Monona, Snowden, and B0178-34 also produced acceptable chips directly from 45°F storage. Although none of the selections produced acceptable chips directly out of 38°F storage, Atlantic, MaineChip, Monona, Snowden, B0178-34, NC012-18, NYE55-35, and NY87 reconditioned well from 38°F storage.

Eide Russet, Norchip, Russet Burbank, Superior, AF1433-4, AF1438-1, B0175-20, B0405-4, B0564-8, and NYE11-45 had after-cooking darkening scores that were considerably poorer than Katahdin. Scores were particularly good for BelRus, Spartan Pearl, AF1331-2, B0178-34, B0257-12, B9922-11, and NC012-18. Washed appearance ratings were particularly outstanding for Allegany, BelRus, Chipeta, Goldrush, St. Johns, AF1331-2, AK-3-79--209-81, B0585-5, B0635-6, B9922-11, and NC012-18. The following lines had very high levels of silver scurf on their tubers: Kennebec, Norchip, Monona, St. Johns, Superior, AF875-15, NYE11-45, NYE55-35, and NYE55-44. Allegany, Atlantic, Katahdin, Norchip, Spartan Pearl, Snowden, Superior, AF1060-2, AF1333-1, B0175-20, B0405-4, B0564-8, MN12823, NYE55-44, and NY87 had greater than 30% of tubers with extensive black scurf. Russet scab was a serious skin defect for Chipeta, Monona, Spartan Pearl, AF1426-1, B0257-12, and NY84. Black dot was prevalent on the skin of MaineChip and AF875-15.

Tuber dormancy was exceptionally short and early sprout growth was rapid for Castile, Eide Russet, Goldrush, AF1060-2, B0405-2, B0564-8, B0635-6, NY84, and W1005Rus. Within their maturity groupings, Russet Burbank, Spartan Pearl, AF1426-1,

and MN12823 had particularly long dormancy. Allegany, Chipeta, Russet Burbank, Spartan Pearl, Yukon Gold, AF1426-1, MN12823, and MN13540 required more than 170 days to reach the one-half-inch sprout stage. Selections with very low weight loss (4.0% or less) from 38°F storage were Norchip, Russet Burbank, Superior, Yukon Gold, AF1331-2, AF1333-1, AF1426-1, AF1433-4, AF1438-4, and NYE55-44. Selections with very low weight loss (approximately 9% or less) from 50°F storage were Chipeta, Norchip, Russet Burbank, Yukon Gold, AF1331-2, and AF1426-1. Weight loss of AF1426-1 was exceptionally low. MaineChip, St. Johns, AF875-15, B0178-34, B0257-12, B0564-8, B0635-6, and NC012-18 had relatively high weight loss at 50°F. The following lines had small-lot storage samples with considerable tuber rot: Allegany, BelRus, Eide Russet, St. Johns, B0175-20, B0564-8, B9922-11, NYE55-35, and W1005Rus.

Overall Summary. Selections that performed particularly well in the 1994 Aroostook Farm NE107 trials were AF1331-2 (early tablestock round-white); St. Johns and AF1060-2, (late season, tablestock round-whites); NYE55-44 (early to mid-season, chipstock); NY87 (mid-season chipstock); and B9922-11 (russet tablestock and french fry processing).

AF875-15 potentially fills a niche as an out-of-field chipper with resistance to hollow heart and internal necrosis. Tubers of AF875-15 tend to be small and unattractive and it does not chip particularly well from storage. AF1426-1 is an interesting early to mid-season selection in that during 1993 and 1994 it has produced reasonable yields, good tuber size, and good chip colors with very long tuber dormancy and low storage weight loss. A drawback is that AF1426-1's oblong tubers have not been particularly uniform and attractive. AF1470-17 showed promise as a mid-season tablestock selection in its first season of testing; however, tuber size was not impressive during the dry 1994 season. None of the lines displayed the ideal combination of high yields, large elongated tubers, high specific gravity, fry color, processed color and texture needed for optimum french fry utilization. Over the past few years, B9922-11 provided the best combination of these characteristics; however, its yields have not been exceptional and tubers are not long enough to produce premium quality fries. Castile and Goldrush have provided higher yields, but french fry quality of these lines has not been very impressive. B0493-8 produced promising yields and tuber size in its first season of testing as a tablestock russet; however, tuber appearance was not outstanding.

Maine Table 1. Yield, marketable yield, percentage of yield by size distribution, and specific gravity for nine early maturing and seven russeted/processing varieties grown at Presque Isle, Maine - 1994.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	% of std.	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.
						1	2	3	4	5	6	1-7/8 to 4"	2-1/4 to 4"	2-1/2 to 4"		
Early Test- 95 days																
Superior (std)	212	200	100	98(10)	6-12	4	29	48	19	0	0	96	68	19	1.094	
Norchip	201	170	85	99(10)	6-14	12	41	35	12	0	0	88	47	12	1.091	
AF1331-2	261	232	116	100(10)	6-12	5	27	40	27	0	0	95	68	28	1.089	
AF1424-6	149	137	68	93(10)	6-15	6	25	33	34	3	0	94	69	36	1.094	
AF1424-7	186	168	84	97(10)	6-14	9	37	40	14	0	0	91	54	14	1.097	
AF1426-1	232	221	110	98(10)	6-19	1	11	40	43	5	0	99	88	48	1.084	
AF1438-4	251	217	108	98(10)	6-13	9	32	39	19	0	0	91	59	20	1.087	
AF1438-5	251	201	100	98(10)	6-11	20	56	22	3	0	0	80	24	3	1.083	
AF1438-6	285	245	122	98(10)	6-12	6	25	38	30	1	0	94	69	31	1.083	
W-D LSD (K=100)	52	56										5	11	10	0.004	
Russet/Processing Test - 116 days																
R. Burbank (std)	286	177	100	100(16)	6-12	34	54	12	0	0		% >8 oz.	% >12 oz.			
BelRus	186	75	44	100(14)	6-14	60	38	1	0	0		12	0	0	1.083	
Castile	265	176	99	99(14)	6-14	31	51	16	2	1		1	0	0	1.094	
Goldrush	284	160	90	100(14)	6-11	42	50	9	0	0		18	3	3	1.086	
AF1481-4	179	101	57	99(14)	6-14	40	54	6	0	0		9	0	0	1.090	
B0493-8	332	239	135	98(14)	6-16	21	52	21	6	1		6	0	0	1.094	
B9922-11	251	174	98	99(14)	6-17	30	55	11	3	1		28	7	7	1.086	
W-D LSD (K=100)	36	50										14	3	3	1.093	
												10	3	3	0.003	

¹Marketable yield of early varieties = yield 1-7/8 to 4" excluding external defects. Marketable yield of russet/processing varieties = yield > 4 oz. excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for early varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4". Size classes for russeted/processing varieties: 1= <4 oz; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz.

Maine Table 2. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for nine early maturing and seven russeted/processing varieties grown at Presque Isle, Maine - 1994.

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)			Hollow Heart Rating ²	Chip Color ³			
	Size 7-21	Vine Matur. at 8-17	Matur. at Vinekill	Skin Texture	Shape	Appearance	Total			Sun-burn	Mis-shapen	Growth cracks
Early Test- 95 days												
Superior (std)	7	5	3	6	3	6	2.3	0.2	1.5	0.6	0	60
Norchip	5	4	4	7	2	5	3.9	0.0	3.9	0.0	0	63dr
AF1331-2	6	6	8	6	4	7	6.2	0.8	1.5	3.9	0	56
AF1424-6	5	6	6	7	2	7	2.5	0.8	0.2	1.5	0	65
AF1424-7	3	3	4	7	2	4	0.7	0.3	0.3	0.1	0	66
AF1426-1	6	6	8	5	6	3	3.7	0.7	0.2	2.7	0	65ds
AF1438-4	7	4	4	6	3	5	5.2	1.2	0.0	3.9	0	60ds
AF1438-5	6	3	3	5	1	6	1.1	0.6	0.1	0.3	0	55ds
AF1438-6	7	4	4	5	2	4	8.6	0.8	1.5	6.2	0	42
Russet/Processing Test - 116 days												
R. Burbank (std)	8	8	6	4nr	7	4	6.0	0.2	4.9	0.8	0	n/a
BelRus	3	6	3	2nr	6	3	3.4	1.4	1.1	0.9	0	n/a
Castile	7	9	5	7	5	5	5.0	2.2	2.7	0.0	0	50dr
Goldrush	6	5	2	4nr	6	3	3.6	1.1	2.3	0.2	0	47ds
AF1481-4	5	6	4	3	7	6	6.1	0.5	3.4	2.2	0	51ds
B0493-8	7	7	4	4nr	6	4	9.8	1.7	8.0	0.0	0	36ds
B9922-11	7	8	5	2	6	7	2.2	0.8	1.0	0.4	0	48

¹See standard NE107 rating system for key to codes; nr = indicates non-uniform russetting.

²Unless otherwise noted, hollow heart rating equals number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agron M35 (higher values indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring; ds = dark stem end. Waller Duncan LSD (K=100) for chip color = 4 (early test) and 4 (russet/processing test).

Maine Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 18 medium maturing chipping varieties grown at Presque Isle, Maine - 1994.

Variety	Total Yield cwt/A	Mkt. Yield ¹ cwt/A	Yield ¹ % of std.	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.
						1-7/8" to 4"										
						1	2	3	4	5	6	1-7/8" to 4"	2-1/4" to 4"	2-1/2" to 4"		
Medium Chipping Test- 105 days																
Kennebec (std)	283	266	100	98(8)	6-13	4	21	41	33	2	0	96	76	35	1.096	
Atlantic	269	247	93	99(10)	6-13	7	30	34	27	2	0	93	63	29	1.116	
Mainechip	246	217	82	100(10)	6-14	10	41	34	15	0	0	90	48	15	1.117	
Snowden	220	151	57	100(12)	6-15	31	56	12	1	0	0	69	13	1	1.113	
AF875-15	250	223	84	100(10)	6-12	8	40	35	17	0	0	92	52	17	1.102	
AF1433-4	245	217	82	98(10)	6-15	9	34	30	24	2	0	91	56	26	1.098	
B0172-22	270	249	94	100(10)	6-14	4	20	41	31	3	0	96	76	35	1.108	
B0245-15	197	181	68	99(8)	6-15	6	30	40	23	1	0	94	64	25	1.100	
B0257-12	245	226	85	100(10)	6-11	5	23	38	32	1	0	95	72	33	1.109	
B0564-8	241	203	76	100(10)	6-13	15	49	31	4	0	0	85	36	4	1.113	
B0564-9	212	185	70	100(10)	6-13	10	39	36	15	1	0	90	51	15	1.109	
B0585-5	223	205	77	100(10)	6-14	3	10	33	52	3	0	97	87	55	1.105	
B0635-6	213	197	74	100(10)	6-12	7	34	46	13	0	0	93	59	13	1.112	
NC012-18	288	246	92	98(10)	6-13	12	42	32	14	0	0	88	47	15	1.115	
ND2417-6	287	230	86	100(10)	6-13	16	44	29	11	0	0	84	40	12	1.106	
ND2471-8	259	239	90	100(10)	6-12	7	29	42	22	0	0	93	64	22	1.114	
NYE55-44	259	239	90	100(10)	6-13	6	32	40	21	0	0	94	62	22	1.109	
NY87	260	237	89	100(10)	6-14	7	33	43	16	1	0	93	60	17	1.097	
Waller Duncan LSD (K=100)	46	43									4	10	11	0.004		

¹Marketable yield = yield 1-7/8 to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for medium varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4".

Maine Table 4. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 18 medium maturing chipping varieties grown at Presque Isle, Maine - 1994.

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)			Hollow Heart Rating ²	Chip Color ³			
	Size 7-21	Vine Matur. at 8-17	Matur. at Vinekill	Skin Texture	Shape	Appearance	Total			Sun-burn	Mis-shapen	Growth cracks
Medium Chipping Test- 105 days												
Kennebec (std)	8	8	6	8	5	5	2.6	1.2	1.1	0.3	0	66
Atlantic	7	6	5	5	2	6	1.9	1.3	0.4	0.2	2	64dr
MaineChip	6	6	5	8	1	5	2.3	0.8	1.0	0.6	0	67
Snowden	7	6	5	5	1	4	1.3	1.0	0.3	0.0	0	62dr
AF875-15	5	5	4	6	3	3	3.4	0.9	1.3	1.3	0	66
AF1433-4	7	6	5	7	2	4	2.5	1.8	0.7	0.0	0	66
B0172-22	7	7	5	7	3	4	4.3	0.5	1.7	2.2	1	65dr
B0245-15	8	5	4	6	2	6	1.8	1.4	0.4	0.0	0	68
B0257-12	7	6	6	6	3	5	2.9	1.1	0.9	0.8	0	68dr
B0564-8	8	5	4	5	1	5	0.7	0.5	0.2	0.0	1	63nu
B0564-9	7	6	5	5	2	6	2.8	1.6	1.2	0.0	1	63nu
B0585-5	6	5	4	7	2	7	5.8	3.3	0.1	2.4	0	66
B0635-6	7	5	4	5	3	3	1.3	0.6	0.7	0.0	2	63ds
NC012-18	7	7	6	6	2	6	3.0	1.2	1.2	0.6	0	65dr,ds
ND2417-6	7	6	5	8	2	5	4.8	2.3	2.4	0.0	0	61dr
ND2471-8	8	5	3	8	2	6	0.8	0.7	0.0	0.1	1	57nu
NYE55-44	7	5	5	5	3	7	1.7	0.6	0.9	0.2	0	71
NY87	8	5	4	7	3	8	1.8	1.7	0.1	0.0	0	69b1

¹See standard NE107 rating system for key to codes.

²Unless otherwise noted, hollow heart rating equals number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher scores indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring; b1 = many blistered chips. Waller Duncan LSD (K=100) for medium variety's chip color = 3.

Table 5. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for eight medium maturing tablestock varieties and nine late maturing varieties grown at Presque Isle, Maine - 1994.

Variety	Total Yield cwt/A	Mkt. Yield ¹ % of std. cwt/A	% Stand (spacing) ²	50% Emerg. Date	Size Distribution by Class ³ (%)										Spec. Grav.	
					1	2	3	4	5	6	1-7/8 to 4"	2-1/4 to 4"	2-1/2 to 4"			
Medium Tablestock Test- 105 days																
Kennebec (std)	275	257	100	6-14	4	23	36	36	1	0	96	74	37	1.094		
Atlantic	259	242	94	6-13	5	29	44	22	0	0	95	66	22	1.112		
Spartan Pearl	247	231	90	6-13	5	23	48	24	0	0	95	72	24	1.103		
Yukon Gold	216	204	79	6-19	3	19	37	38	4	0	97	78	42	1.099		
AF1425-1	237	208	81	6-13	10	46	36	8	0	0	90	44	8	1.092		
AF1438-1	237	208	81	6-12	11	53	32	4	0	0	89	37	4	1.089		
AF1470-17	308	266	104	6-12	12	39	37	13	0	0	88	49	13	1.093		
B0613-2	229	196	76	6-14	10	43	38	9	0	0	90	47	9	1.101		
W-D LSD (K=100)	29	25									2	8	8	0.004		
Late Test- 116 days																
Katahdin (std)	292	270	100	6-16	6	27	38	29	0	0	94	67	29	1.087		
Monona	218	195	72	6-13	7	29	36	28	1	0	93	64	29	1.079		
St. Johns	331	301	112	6-18	4	23	37	34	2	0	96	73	36	1.084		
Chipeta	306	290	107	6-13	1	8	25	53	12	0	99	91	66	1.085		
AF1060-2	287	261	97	6-14	8	31	43	18	0	0	92	61	18	1.089		
AF1452-28	172	160	59	6-14	3	15	34	43	5	0	97	82	48	1.085		
B0405-4	261	228	84	6-14	11	41	39	9	0	0	89	48	9	1.098		
MN12823	373	334	124	6-14	4	12	28	51	5	0	96	85	56	1.081		
NYE55-35	236	196	73	6-14	16	57	25	1	0	0	84	27	1	1.098		
W-D LSD (K=100)	47	49									3	10	11	0.003		

¹Marketable yield = yield 1-7/8 to 4" excluding external defects.

²Inches between seedpieces noted within parentheses.

³Size classes for medium and late varieties: 1=1-1/2 to 1-7/8"; 2=1-7/8 to 2-1/4"; 3=2-1/4 to 2-1/2"; 4=2-1/2 to 3-1/4"; 5=3-1/4 to 4"; 6=over 4".

Maine Table 6. Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for eight medium maturing tablestock varieties and nine late maturing varieties grown at Presque Isle, Maine . 1994.

Variety	Plant Data ¹		Tuber Data ¹		Tuber Defects (%)			Hollow Heart Rating ²	Chip Color ³		
	Size 7-22	Vine Matur. at 8-17	Matur. at Vinekill	Skin Texture	Shape	Appear-ance	Tuber Defects (%)				
							Total			Mis-shapen	Growth cracks
Medium Tablestock Test- 105 days											
Kennebec (std)	8	6	4	7	5	5	2.8	1.2	1.2	0	66
Atlantic	7	6	5	5	1	7	1.9	0.9	0.3	0	67
Spartan Pearl	5	5	4	6	1	6	1.2	1.0	0.1	0	67
Yukon Gold	7	5	3	8	3	8	2.5	1.4	0.7	0	55ds, dr
AF1425-1	6	3	2	7	2	7	2.1	1.9	0.2	0	66
AF1438-1	6	4	2	6	2	5	1.9	1.0	0.0	0	71
AF1470-17	8	6	4	7	2	7	2.3	2.1	0.2	0	60dr
B0613-2	5	7	6	5	1	5	5.0	2.0	0.4	0	66dr
Late Test- 116 days 8-16 9-1											
Katahdin (std)	7	6	4	7	2	7	2.4	1.8	0.6	0	58nu
Monona	7	5	3	6	2	5	3.6	3.2	0.2	0	67
St. Johns	7	7	6	6	2	6	4.7	4.1	0.4	0	51ds
Chipeta	9	8	6	5	2	3	4.0	2.1	0.4	0	60dr
AF1060-2	6	6	4	7	1	7	1.2	0.4	0.2	1	54
AF1452-28	5	5	4	6	2	4	4.0	2.7	0.0	0	67
B0405-4	6	7	6	5	3	4	2.2	1.9	0.3	0	58dr
MN12823	8	8	6	7	4	2	7.5	3.7	2.5	0	52ds
NYE55-35	7	8	6	6	1	6	1.1	0.4	0.6	0	68

¹See standard NE107 rating system for key to codes.

²Unless otherwise noted, hollow heart rating equals number of hollow tubers found per 40 large tubers cut and examined.

³Chip color -- Agtron M35 (higher scores indicate lighter color): >60 acceptable; nu = non-uniform color; dr = dark vascular ring. Waller Duncan LSD (K=100) for medium variety's chip color = 2 and for late variety chip color = 5.

Maine Table 7. French fry color and texture of selected potato clones and varieties under simulated processing conditions¹. All varieties were grown at Presque Isle, Maine, during 1993.

Variety	Color Grade ² Rating Index	Grayness ³ Index	Mealiness ⁴ Index	Comments ⁵	Overall Rating ⁶
Russet Burbank (std)	0	1.8	4.0	U	
BelRus	0	2.0	3.10	B1, Ir	-
Castile	0	2.3	3.15	B1	-
Eide Russet	1	3.2	2.42	B1	-
Goldrush	0	2.3	3.36	B1	-
B9922-11	0	2.0	2.59	Be	0
W1005Rus	00	1.3	3.48	U	+
Waller Duncan LSD (k=100)		NS	0.45		

¹Two center raw tuber slices were cut from each of ten tubers. The slices were rinsed in cool water, blanched for 8 minutes at 170°F, par-fried at 375°F for 80 seconds, and quick frozen at -30°C in plastic bags. Four such replications were processed and held at -15°F until evaluation. Prior to evaluation, samples were finish-fried at 360°F for 2-1/2 minutes, blotted dry with a paper towel, and cooled for 6 minutes. All samples were processed and evaluated by T. Work of the Department of Food Science, University of Maine, Orono, ME. Blanching and par-fry were conducted on February 8, 1994. Finish-fry and evaluations were conducted on March 17, 1994. All tuber samples were stored at 50°F, 85% R.H. from harvest until processing.

²Color Grades are from USDA color standards chart #64-1, third edition.

³Grayness indices represent weighted means derived from the following evaluation scale: 4 = no graying; 3 = slight graying; 2 = moderate graying; 1 = intense graying.

⁴Mealiness indices represent weighted means derived from the following evaluation scale: 5 = dry, mealy; 4 = mod. mealy, sl. moist; 3 = sl. mealy, mod. moist; 2 = soggy, not mealy; 1 = very soggy, not mealy.

⁵Comments: U = uniform fried color; Ir = french fries were irregular in color; dark blotches detracted from appearance of product; Be = Dark blotches on ends of many fries; Bc = Dark blotches in centers of many fries; B1 = general blotchy appearance of fries; Sh = Short fries from round tubers.

⁶Overall rating: quality rated better (+), not different (o), or poorer (-) than Russet Burbank.

Maine Table 8. Chip color from 38°F, 45°F, and 50°F storage, reconditioning potential, after-cooking darkening indices, washed appearance ratings, days to sprout formation, and storage weight losses at 38°F and 50°F for 44 potato varieties grown at Presque Isle, Maine, during 1993 and stored during the 1993-1994 storage season.

Variety	Chip Color from Storage			After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Sprout Length ⁵		Storage Wt. Loss %		
	50°F ¹	45°F ¹	38°F ¹			Recond. ²	PIP	1/2"	38°F	50°F
Early Test:										
Superior	57	46	16	49	88(3)	PC,BS	114	156	2.8	12.2
Norchip	62	52	21	48	87(3)	PC,SS,BS	100	156	2.8	8.2
AF1331-2	37	28	--	27	90(8)	BS,B	100	163	3.0	7.2
AF1333-1	46	33	--	34	82(5)	PC,BS,B	93	156	2.1	9.9
AF1426-1	62	49	21	35	96(6)	PC,SB,RS,BS,B	156	--	2.1	3.0
AF1438-4	55	38	11	25	90(4)	PC,RS,BS,B	107	156	2.9	10.4
NYE55-44	63	53	23	46	87(3)	PC,SS,BS	100	163	2.5	14.1
W-D LSD	4	5	2	9						
Medium Test:										
Kennebec	61	56	29	56	94(4)	PC,RS,SS,BS,B	96	166	6.1	13.0
Atlantic	63	55	35	62	85(6)	PC,RS,BS,B	117	152	4.4	17.6
Chipeta	63	53	36	52	93(7)	PC,RS,B	125	180	4.3	8.4
MaineChip	66	64	39	64	73(4)	PC,B,BD	103	159	5.9	28.2s
Snowden	65	64	39	64	44(4)	PC,BS,B	110	152	4.8	15.0
Spartan Pearl	59	--	--	50	84(3)	PC,RS,BS,B	139	173	4.8	11.0
Yukon Gold	41	--	--	45	90(6)	PC,RS,SS,B	131	180	3.5r	8.2
AF875-15	60	56	42	57	85(3)	PC,SS,B,BD	110	152	5.5r	22.8s
AF1433-4	59	49	30	54	67(3)	B	82	152	3.8	13.3
AF1438-1	56	47	--	44	85(4)	PC,RS,B,BD	96	159	5.5	13.6
B0178-34	64	61	47	64	89(3)	PC,CS,RS,BS,B	96	152	8.3	25.7s
B0257-12	59	54	43	56	88(2)	PC,RS,B	103	152	6.9	21.6s
MN12823	56	51	--	49	89(4)	PC,M,SB,SS,BS,B	139	180	5.8	14.9
MN13540	60	52	--	58	85(6)	PC,RS,SS,BS,B	96	180	4.9	11.4
NC012-18	60	57	42	64	87(7)	B	96	152	5.2	29.3s
NY87	65	59	38	64	87(5)	PC,SS,BS,B	110	159	5.3	16.7
W-D LSD	4	5	5	4						

Maine Table 8 cont.

Variety	Chip Color from Storage		After-Cooking Darkening ³	Washed Appearance Index ⁴	Days to Indic. Sprout Length ⁵		Storage Wt. Loss %		
	50°F ¹	45°F ¹ 38°F ¹ Recond. ²			PIP	1/2"	38°F	50°F	
Late Trial:									
Katahdin	46	35	15	46	100(6) ^{PC, RS, SS, BS, B}	111	152	6.6	12.2
Allegany	49	43	21	48	99(8) ^{PC, RS, SS, BS, B}	89	175	8.4 ^r	17.8 ^r
Monona	62	60	26	64	94(4) ^{PC, RS, SS, B}	75	152	6.5	12.8
St. Johns	30	22	--	33	96(7) ^{PC, CS, SS, BS, B, BD}	75	152	8.5	20.0 ^r
AF1060-2	36	32	--	37	90(5) ^{PC, SS, BS, B}	75	139	4.3	13.7
AK-3-79-209-81	25	22	--	24	99(7) ^{PC, RS, SS, BS, B}	111	152	4.5	10.6
B0175-20	61	58	31	57	98(4) ^{PC, BS, B}	75	146	8.2	16.7 ^r
B0405-4	57	54	20	56	93(5) ^{PC, SS, BS, B}	68	117	7.2	16.4
B0564-8	56	52	29	56	77(3) ^{PC, SS, BS, B}	75	139	6.7	23.5 ^r
B0585-5	62	57	34	58	86(7) ^{B, BD}	89	146	6.2	18.7
B0635-6	52	49	24	56	96(7) ^B	75	125	4.5	23.0 ^s
NYE11-45	60	52	24	59	63(2) ^{PC, SS, B}	89	139	5.6	12.5
NYE55-35	61	58	28	64	82(3) ^{PC, SS, B}	111	168	5.7	10.4 ^r
NY84	28	23	--	31	99(5) ^{PC, RS, SS, B}	68	139	9.0	16.1
W-D LSD	3	4	4	5					
Russet/Processing Trial:									
Russet Burbank	40	33	21	40	95(7) ^B	119	177	3.7	7.0
BelRus	42	32	24	42	97(7) ^B	70	154	7.9 ^r	16.8 ^r
Castile	42	32	22	44	95(5) ^{CS, SS, BS, B, BD}	84	141	4.4	13.1
Eide Russet	31	24	17	28	88(4) ^B	77	141	4.6	16.0 ^{rs}
Goldrush	36	26	20	35	96(7)	70	134	5.0	11.8
B9922-11	46	29	17	45	100(8) ^B	84	161	5.9	11.1 ^r
W1005Rus	52	44	32	48	95(4) ^B	70	134	6.1	19.7 ^{rs}
W-D LSD	4	4	3	4					

Maine Table 8 cont.

- ¹Stored at 38°F, 45°F, or 50°F, 85% R.H. from harvest until February 3 to 22, 1994. Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors.
- ²Reconditioned samples were taken from 38°F and placed at 70°F for a 3-week period starting on January 10, 1994. See Agtron description under footnote #1.
- ³Samples were stored at 45°F, 85% R.H. from harvest until April 15, 1994, and were then warmed to 65°F for five days. Diced tubers were blanched for 5 min., cooled to 120°F, then rated after 30 min. with a Munsel Neutral Color Scale. Higher indices indicate lighter color. Notes: sl=sloughing; be=very dark ends; yf=strong yellow color.
- ⁴Unreplicated samples weighing approximately 7500 grams were stored at 45°F and 85% R.H. until February 1, 1994. Tubers were then washed and graded. First number indicates % U.S.#1 grade tubers in sample. Numbers in parentheses indicate subjective appearance of the sample using standard NE107 appearance code. Codes indicate major external defects as follows: M=misshapen, NR=nonuniform russetting, PC=poor color, SB=sunburn, GC=growth cracks, CS=common scab, SS=silver scurf, RS=russet scab, DR=dry rot, SR=soft rot, BS=black scurf, LE=enlarged lenticles, B=bruises, BD=blackdot, PW=powdery scab, RA=red areas.
- ⁵Tubers were stored at 45°F, 85% R.H.
- ⁶Percentage sprout and weight loss following storage from harvest until April 1 to 5, 1994, at indicated temperature and 85% R.H. Codes "s" or "r" indicate heavily sprouted or spoiled samples, respectively.

Maine Table 9. Standard NE107 rating codes for plant and tuber characteristics.

Rating Code	Plant Characteristics				
	Plant Size	Air Pollution	Vine Maturity	Plant Appearance	Maturity at Vinekill
1	Very Small	Dead	Very Early	Very Poor	Completely Dead
2	+ Small	-- Mod. Defol.	Early +	Poor +	-- Yel. and Dying
3	+ Medium	-- Mod. Injury	Medium Early	-- Fair	-- Mod. Mature
4	+ Large	-- Mild Injury	Medium Late +	+ Good	-- Initial Mat.
5	+ Very Large	-- No Symptoms	Late +	Good	-- Not Maturing
6			Very Late	Excellent	

Rating Code	Tuber Characteristics				
	Skin Color	Skin Texture	Tuber Shape	Eye Depth Overall Appearance	
1	Purple	Part. Russet	Round	Very Deep	Very Poor
2	Red	Heavy Russet	Mostly Round	--	--
3	Pink	Mod. Russet	Round to Oblong	Deep	Poor
4	Dark Brown	Light Russet	Mostly Oblong	--	--
5	Brown	Netted	Oblong	Intermediate	Fair
6	Tan	Slight Net	Oblong to Long	--	--
7	Buff	Mod. Smooth	Mostly Long	Shallow	Good
8	White	Smooth	Long	--	--
9	Cream	Very Smooth	Cylindrical	Very Shallow	Excellent

Michigan Potato Variety Evaluations

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The objectives of the evaluation and the management studies are to identify superior varieties for fresh market or for processing and to develop recommendations for the growers of those varieties. The varieties were compared in groups according to the tuber type and skin color and to the advancement in selection. Total and marketable yields, specific gravity, tuber appearance, incidence of external and internal defects, chip color (from 45 and 50°F storage), consistency and after cooking darkening as well as susceptibilities to common scab, *Fusarium* dry rot, *Erwinia* soft rot and blackspot bruising were determined.

The field experiments were conducted at the Montcalm Research Farm in Entrican. They were planted in randomized complete block design, in four replications. The plots were 23 feet long and spacing between plants was 12 inches. Inter-row spacing was 34 inches. A total of 160 different varieties and advanced selections were tested from MSU and other North American and European breeding programs.

Both round and long variety groups were harvested at two dates. The yield was graded into four size classes, incidence of external and internal defects was recorded, and samples for specific gravity, chipping, bruising and cooking tests were taken. Chip quality was assessed on 25-tuber samples, taking two slices from each tuber. Chips were fried at 365°F. The color was measured with an M-35 Agtron colorimeter and visually with the SFA 1-5 color chart. Prior to chipping, the tubers were stored at 45 or 50°F.

Round White Varieties

Ten varieties and 15 breeding lines were compared at two harvest dates. Atlantic, Snowden, Onaway, and Superior were used as checks. The average yield was high and specific gravity was slightly above the normal level. Hollow heart was prevalent in the late harvest

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and blackspot bruise was severe. The results are presented in Tables 1 and 2.

Variety Characteristics

Onaway—Medium-early fresh market variety with excellent yield potential and a low specific gravity. Tubers are round to oblong, large, deep eyes, susceptible to growth cracks and early blight. It has very good internal quality, but the storability is poor because of susceptibility to tuber early blight. 1994 was not good year for tuber appearance.

Atlantic—Medium-late, chipping variety of high specific gravity and good yield potential. Susceptible to scab, soft rot, white knot, and to internal defects (hollow heart, vascular discoloration, internal brown spot). The variety exhibited considerable hollow heart in the oversize tubers, otherwise the variety performed well in 1994.

Snowden—Late maturing variety of excellent chipping quality. Specific gravity high. Tubers are round, small to medium size, well shaped with excellent internal quality. It is not resistant to scab, but has some resistance to *Fusarium* dry rot. Variety maturity in 1994 was earlier than other years.

Superior—Medium-early, fresh market variety. Tubers are well-shaped, medium size with a medium specific gravity. Resistant to scab but very susceptible to *Verticillium* wilt. In 1994, 33% hollow heart was observed in the oversize tubers.

Chaleur—Medium early fresh market variety from Canada. Yield and specific gravity were low during 3 years of testing in Michigan. Tubers were large, few per hill, and of good appearance with a very good flesh color. Internal defects are low. It has moderate resistance to scab.

Portage—Early to medium early fresh market variety. Showed good yield potential and tuber appearance was good, specific gravity low, and very susceptible to scab. In 1993, the incidence of hollow heart was high, while in 1994 hollow heart and vascular discoloration incidence were above average.

Prestile—Very late, fresh market variety from Maine. It has shown excellent yield potential and good tuber shape. Specific gravity is medium. Internal defects have been low in Michigan and it is resistant to scab.

AF1060-2—Late, fresh market variety of high yield potential and excellent internal quality, but low specific gravity. It is susceptible to scab. Maine may name this one soon.

St. Johns—Tested in 1993 as AF828-5, medium late fresh-market variety of high yield potential (but consistently lower than AF1060-2), but low specific gravity. There was some variation in shape, but general appearance was good with large tubers and excellent internal quality. It is susceptible to scab infection.

AF875-15—Tested two years in this trial. Medium early, chip variety of high yield potential. Maturity was probably enhanced by heavy early blight infection. Medium-sized tubers, somewhat irregular in shape and deep apical eyes. Susceptible to scab infection. A tendency towards hollow heart and vascular discoloration was observed in 1994.

NY84—Tested two years in this trial. Medium late variety of high yield potential, but very low specific gravity. Good internal quality. It shows moderate resistance to scab infection.

NY95—Tested two years in this trial. Medium late, high yielding variety of excellent chipping quality, high specific gravity and very good internal quality. It also has moderate scab resistance. This line may be dropped by New York.

FL1533—Was tested in the adaptation trial in 1993. It is a high yielding chipping selection with very good internal quality but a specific gravity that is below 1.080. It is susceptible to scab and late blight.

FL1833—Was tested for the first time in 1994. This variety had high yield potential, high specific gravity, very good internal quality but susceptible to scab.

MSB076-2—This MSU selection was tested in the adaptation trial in 1993. It is high yielding, has very high specific gravity, acceptable chip quality and resistant to scab. In 1994 we observed a tendency for hollow heart in oversize tubers.

AC Parmigin—This protected variety from Ag Canada is a high yielding clone with excellent internal quality, low specific gravity with oval-shaped tubers. It has moderate resistance to scab.

MS700-70—A high yielding chipping selection from MSU that was previously tested in the 1980s. This selection has high yield potential, high specific gravity and good internal quality.

ND2417-6—A cold-chipping selection with above average yield potential, but moderate specific gravity. It is also susceptible to scab.

ND2471-8—A cold-chipping selection with below average yield potential, high specific gravity and small tuber size. Hollow heart was noted in the A-size tubers in the North Central trial. It is susceptible to scab.

AC Novachip—A protected variety from Ag Canada with above average yield potential, high specific gravity but a tendency towards hollow heart. It is scab susceptible.

MN15111—A chipping selection with average yield, moderately high specific gravity and a small percentage of oversize tubers. It is moderately susceptible to scab.

NY102—This selection has been in the SFA trials but tested for the first time at MRF. It had average yield, few oversize tubers and a moderately high specific gravity. It is moderately susceptible to scab.

MSB007-1—A MSU selection which is oblong in shape with a bright skin. This selection would fit a tablestock market because of its good cooking quality and resistance to hollow heart. Its weakness is susceptibility to scab.

Long Varieties

Seven varieties and eight breeding lines were tested in two dates of harvest. The trial was noted for its greater than average percentage of tubers under 4 ounce size. Other than Goldrush and Russet Norkotah, the lines were late or very late. Both Russet Burbank and Russet Norkotah performed poorly. Many western breeding program selections were tested. The lines with the best overall potential included Century Russet, AO82611-7 and A7961-1. The results are summarized in Tables 3 and 4.

Variety Characteristics

Russet Burbank—Used as a standard in the trial. Late maturity, average yields. Specific gravity good for processing and baking. Has a tendency to form off-shape and undersize tubers and is resistant to scab. In 1994 its yield was below average.

Russet Norkotah—Early to mid-season variety. Yield potential and specific gravity are rather low. Tubers are oblong to long and well shaped with some resistant to scab. After cooking darkening was recorded in some years as well as susceptibility to *Verticillium* wilt. It performed poorly in 1994.

Ranger Russet (A7411-2)—late, processing variety. Yield potential average but specific gravity is high and internal quality is good. Susceptible to blackspot and scab.

Goldrush—Medium early, fresh market variety. Yield potential is medium to high, specific gravity low, and internal quality good. Tubers are russet, oblong to long, and well shaped. After-cooking quality is better than Russet Norkotah. It is moderately resistant to scab and performed well in 1994.

A84180-8—Medium late, russet variety, tested two years in Michigan. It showed high yield potential. Tubers were long, well shaped, and uniform in size. Specific gravity was medium-low and a strong tendency to hollow heart was noted.

A81473-2—Tested for the first time, this late-maturing selection had the highest yield, moderate specific gravity but a tendency to form hollow heart. It is scab resistant.

Century Russet—A light russeted selection with high yield potential, moderately high specific gravity and excellent internal quality. It is moderately susceptible to scab.

A82119-3—A russet selection with high yield potential, moderately high specific gravity but susceptibility to hollow heart and scab.

AO82611-7—A russet selection with high yield potential but a lower percent US #1 yield, high specific gravity and good internal quality. It is moderately susceptible to scab.

Itasca—Is a oval, white-skinned variety with above average yield, low specific gravity and excellent internal quality. It is moderately susceptible to scab.

A7961-1—This Idaho russet has high yield potential but a lower percent US #1 tubers, high specific gravity and a tendency towards hollow heart in the oversize tubers. It performed well in the Mid-America fry tests. It is scab resistant.

COO83008-1—This russet selection has average yield, moderately high specific gravity and a susceptibility to hollow heart. It also showed resistance to scab.

Crestone Russet—This russet selection had poor emergence, below average yields, low specific gravity and some resistance to scab.

A8495-1—A russet selection with below average yield, high specific gravity and a tendency to hollow heart. It showed moderate resistance to scab and performed well in the Mid-America fry tests.

Adaptation

The Michigan adaptation trial serves as a screen for advanced breeding lines from various states. The best lines from this trial will enter the dates of harvest experiment the following year. Forty-four lines were tested in 1994. Atlantic, Snowden, and Superior were used as checks. The results are presented in Table 5.

The yields of many selections in the adaptation trial were very high. Some selections with good performance are as follows. **NY101**, a light-yellow-fleshed selection, has high yield as also seen in 1993. Internal quality was excellent as was shape. It is also scab resistant. **NDO1496-1**, a cold-chipping selection, was high yielding, has high specific gravity and large, round, bright tubers but is highly susceptible to scab. **B0257-12**, from Beltsville, is a high yielding selection with a high specific gravity and excellent internal quality, but highly susceptible to scab. **COO80011-5**, is a russet selection with high yield potential, low specific gravity, very good internal quality and scab resistance. **B9922-11**, a Beltsville russet selection, shows promise with above average yield, high specific gravity and resistance to scab. **NDA2031-2**, a cold-chipping selection, had high yield with a large set, but a small in size. It is susceptible to scab. MSU selections that merit further testing are summarized in Tables 6 and 7.

European Trial

In 1994, with the support of the New Brunswick Potato Agency, 11 European varieties from the Netherlands and Scotland were evaluated in Michigan. Spunta, Desiree, Saginaw Gold, Michigold and Yukon Gold were added to the trial (Table 8).

Variety Characteristics

Morning Gold—High yields of U.S. No. 1 potatoes and vigorous early growth. Tuber shape blocky to oval and medium deep eyes. Medium yellow flesh color, tendency for stolons to remain attached and skin spotting noted.

Brodick—High yields of U.S. No. 1 potatoes with very good scab rating. Second year of severe susceptibility to hollow heart and internal brown spot. Vigorous early growth with strong vine. Stem has dark color. Tubers have red splashes, rounded in shape with some pointed shape. Lenticel spotting evident at harvest. Good chip color.

Sante—High yields of U.S. No. 1 potatoes and minimal internal defects. Vigorous and upright early growth. Tubers round with light yellow flesh.

Agria—Good yields but with pick outs of growth crack and long-pointed tubers. Medium yellow flesh color. Vine growth open and spreading.

Fianna—Good yields with high specific gravity and chip color. Minimal internal defects. Average early growth. Tubers oblong and flattened, slight lenticel spotting and some knobby tubers.

Penta—Good yields with medium specific gravity. Average early growth and smaller plants. Tubers round with some pointed shape. Red eye color, slight netting and medium yellow flesh color.

Morene—Medium yields of tubers generally pointed in shape. Scab tolerance good and late maturity.

Spunta—Average vigor of early growth. High incidence of pick outs with severe lenticel spotting. General appearance was rated low.

Estima—Average yields with medium specific gravity, poor chip color and susceptible to scab. Tubers oblong in shape with several pointed shapes and lenticels evident. Medium yellow flesh color.

Desiree—Plants have a dark stem color and average early growth. Tuber shape oblong, deep eyes, light yellow flesh and tendency for stolons to remain attached.

Dundrod—Below average yields and low specific gravity. Tubers oblong, white flesh and lenticels evident.

Avanti—Yields were below average with a high percentage of potatoes under 2 inches. Tubers were oblong-long with a smooth netted skin and a medium yellow flesh.

Saginaw Gold—Early growth was very vigorous. Tubers were irregular in shape with some black scurf, bright appearance and a light yellow flesh.

Michigold—Vigorous early growth. Tubers are round to blocky with a netted skin. Medium yellow flesh and air checks noted post harvest.

Yukon Gold—Plants erect and upright. Tubers bright, medium yellow flesh and severe hollow heart in large tubers.

Hertha—Lowest yielding variety with very high percentage of tubers under 2 inches. Good chip color and good scab resistance. Tubers small, smooth skin and round in shape with some pointed.

Upper Peninsula Variety Trial

A potato variety trial was conducted by Dr. Rich Leep and Jim Lempke on the Mike VanDamme Farm in Cornell. The plots were planted on May 14 and were harvested on October 3. In-row plant spacing was 12 inches and row width was 36 inches. No irrigation was applied during the season. The yield, size distribution and specific gravity data are shown in Table 9.

Post-harvest Disease Evaluation: Fusarium Dry Rot and Erwinia Soft Rot

As part of the postharvest evaluation, resistance to *Fusarium sambucinum* (fusarium dry rot) was assessed by inoculating whole tubers post harvest. The tubers were held at 20°C for three weeks and then scored for disease by measuring the diameter of the decayed tissue. The rating was based upon a 0 - 9 scale with 0 referring to no infection and 9 equal to complete tissue decay. In 1994 over 150 advanced selections and breeding lines were tested. The results of the 1994 test are summarized in Table 10. As in the previous two years of testing, no absolute resistance was detected in the selections tested. However, there are number of lines that exhibited reduced decay due to the pathogen. Snowden, Russet Norkotah and Superior rated in the top tier of the rankings as in previous years. If you look at these varieties you will note that they are duplicated in the evaluation because they came from different trials. The different ratings for the same varieties reflect the variability associated with this type of evaluation. Therefore, multiple year data, as in most disease evaluations, helps sort out the more resistant and high susceptible lines. In 1994, many new lines were tested, and many of these lines and genetic stocks that were developed at MSU were in the same or better ranking as Snowden. We will follow these lines with guarded optimism.

Resistance to *Erwinia* soft rot was also evaluated in the same advanced selections and breeding lines. No absolute resistance was found among the cultivated material (data not shown). Genetic material obtained from Dr. J. Helgeson (University of Wisconsin, USDA/ARS) exhibited the most resistance to soft rot. We will be conducting follow-up evaluations.

Potato Scab Evaluation

Each year a replicated field trial is conducted to assess resistance to common and pitted scab. In 1994, 150 varieties and advanced breeding lines were planted in a scab inoculated field at the MSU Soils Farm. The varieties are ranked on a 1-5 scale based upon a combined score for scab coverage and lesion severity. Usually examining one year's data does not indicate

which varieties are resistant but should begin to identify ones that can be classified as susceptible to scab. In 1994 the level of infection was quite high and the levels of infection in the check cultivars were in accordance with previous observations. Our goal is to evaluate important advanced selections and varieties in the study at least three years to obtain a valid estimate of the level of resistance in each line. Table 11 summarizes the 1994 scab trial results. Russet lines that shown the most resistance to scab infection in 1994 were A7961-1, A81473-2, B9922-11, B0339-1, COO8011-5, COO83008-1 and Lemhi Russet. Round white tablestock clones with resistance included Superior, Onaway, AF1433-4, MSB040-3, MSB106-7 (oblong), AC Ptarmigan (oval to oblong), Chaleur, NY84, MSC128-1, and MSC125-8. Yellow-fleshed selections with resistance were NY101, MSC120-1Y, MSA097-1Y, and MSB116-1Y. Scab resistance was also identified in the chip-processing clones Brodick, MSB076-2, P84-13-12, NY95 and MSB110-3.

Table 1. Early Harvest: Round Whites (92 days).

Line	CTW/ACRE		% DISTRIBUTION ¹					SPEC GRAV	SFA	INTR. QUALITY ²					3 YR AVE ³
	US#1	TOTAL	US#1	Bs	As	OV	PO			HH	VD	IBS	BC	TOT	
AC PTARMAGIN	311	384	81	11	78	3	8	1.076	2.5	0	0	0	0	6	
PORTAGE	277	346	80	10	69	11	10	1.077	2.5	11	0	0	0	29	314
AF875-15	276	355	78	12	74	4	10	1.090	1.5	1	0	0	0	6	351*
AF1060-2	262	322	81	15	75	6	4	1.078	3.0	2	0	0	0	15	273
PRESTILE	251	298	84	10	83	1	6	1.080	2.5	0	0	0	0	2	270
ST. JOHNS	241	287	84	13	81	3	3	1.075	2.5	0	0	0	0	6	
ND2471-8	235	290	81	17	78	3	2	1.089	1.5	0	0	0	0	7	
NY102	234	305	77	22	76	0	2	1.087	1.0	0	0	0	0	1	
SNOWDEN	228	308	74	25	71	2	1	1.094	1.0	5	0	0	1	6	225
FL1833	225	275	82	16	80	1	2	1.090	1.0	0	0	0	0	3	
SUPERIOR	223	279	80	15	77	3	5	1.079	2.5	1	0	0	1	8	254
NY95	222	311	71	26	71	1	3	1.091	1.5	0	0	0	0	2	286*
ONAWAY	216	309	70	16	65	5	15	1.077	3.5	0	0	0	0	11	267
ATLANTIC	210	266	79	14	78	1	7	1.090	1.5	0	0	0	0	2	297
ND2417-6	207	281	73	22	69	4	5	1.082	2.5	1	0	0	0	10	
MSB106-7	206	250	82	15	77	6	3	1.078	3.0	0	0	0	0	10	
FL1533	194	273	71	23	70	2	6	1.087	1.5	1	0	0	1	3	
NY84	188	245	77	15	74	3	8	1.073	3.0	0	0	0	0	2	247*
FL1839	169	227	75	16	74	0	9	1.086	1.0	0	0	0	0	1	
MS700-70	169	218	78	19	77	0	3	1.090	2.0	0	0	0	1	1	
AC NOVACHIP	162	201	80	16	80	1	3	1.085	3.0	0	0	0	0	1	
CHALEUR	151	176	85	12	85	1	3	1.075	3.0	0	0	0	0	1	211
MSB007-1	149	196	76	24	76	0	1	1.083	3.0	0	0	0	0	0	
MN15111	135	241	56	43	56	0	1	1.081	2.0	0	0	0	0	0	
LSD	48	44						0.004							

¹Size

US#1—A's + OV's

B's—< 2"

A's—2-3.25"

OV—> 2"

PO—Pick outs

²Quality

HH—Hollow Heart

VD—Vascular Discoloration

IBS—Internal Brown Spot

BC—Brown Center

TOT—Total Tubers Cut

³3 Yr Ave—*2 yr data

CWT/ACRE US #1

SFA—Chip SFA Rating

Planted: May 10, 1994

Harvested: Aug. 10, 1994

Table 2. Late Harvest: Round Whites (132 days)

Line	CTW/ACRE		% DISTRIBUTION ¹					SPEC GRAV	SFA	INTR. QUALITY ²					MAT.	3 YR AVE ³
	US#1	TOTAL	US#1	Bs	As	OV	PO			HH	VD	IBS	BC	TOT		
ATLANTIC	466	511	91	7	76	16	2	1.095	1.5	19	0	1	0	40	3.5	429
AF1060-2	450	500	90	6	69	21	4	1.074	-	1	6	0	0	38	3.0	431
SNOWDEN	441	498	88	8	82	6	4	1.087	1.0	7	4	1	0	23	3.0	419
FL1533	425	486	87	8	74	13	5	1.079	1.5	5	0	0	6	34	4.0	
PORTAGE	410	490	84	8	66	17	8	1.071	-	7	10	0	0	40	2.5	400
PRESTILE	407	437	93	4	68	25	3	1.081	-	4	0	3	2	37	4.0	462
FL1833	396	440	90	6	80	10	4	1.088	1.5	3	0	0	0	28	3.0	
MSB076-2	394	455	87	8	84	3	5	1.097	1.5	9	0	0	0	10	4.0	
AC PTARMAGIN	379	470	81	7	72	9	12	1.067	1.5	0	3	1	1	27	2.5	
ST. JOHNS	364	414	88	7	71	17	5	1.076	-	1	2	0	0	38	3.5	
NY95	357	429	83	14	76	7	3	1.091	1.0	2	0	0	0	24	3.5	395*
AF875-15	357	418	85	8	68	17	7	1.081	1.5	8	7	1	4	39	2.0	405*
NY84	345	392	88	7	66	22	5	1.066	1.5	2	5	2	0	37	3.0	387*
MS700-70	335	382	88	7	73	14	5	1.086	1.0	5	1	0	3	35	4.0	
ND2417-6	330	423	78	15	71	7	7	1.078	1.5	1	0	0	0	17	2.0	
AC NOVACHIP	325	377	86	5	68	19	9	1.084	1.5	17	0	1	0	38	3.5	
ONAWAY	324	394	82	8	71	11	10	1.069		3	5	0	1	31	1.0	317
MN15111	316	409	77	19	75	2	4	1.083	1.5	1	0	0	0	5	4.0	
NY102	304	392	78	20	76	1	2	1.084	1.5	1	0	0	0	4	2.5	
MSB007-1	294	349	84	9	74	10	6	1.076		0	5	0	0	32	3.0	
SUPERIOR	268	312	86	9	73	13	5	1.072		9	1	0	3	30	1.0	248
CHALEUR	261	298	88	8	76	11	5	1.068		0	1	1	2	26	1.0	270
ND2471-8	260	330	79	14	77	1	7	1.084	1.5	0	1	0	0	4	1.0	
FL1839	254	298	85	10	81	4	5	1.080	1.0	4	0	0	0	10	2.0	
LSD	59	59						0.003								

¹Size
US#1—A's + OV's
B's—< 2"
A's—2-3.25"
OV—> 2"

²Quality
HH—Hollow Heart
VD—Vascular Discoloration
IBS—Internal Brown Spot
BC—Brown Center

³3 Yr Ave—*2 yr data
CWT/ACRE US #1
SFA—Chip SFA Rating
MAT—Maturity Rating

PO—Pick outs

TOT—Total Tubers Cut

Planted: May 10, 1994
Harvested: Sept. 19, 1994

Table 3. Early Harvest: Long Russets (92 days)

Line	CTW/ACRE		% DISTRIBUTION ¹					SPEC GRAV	INTR. QUALITY ²					3 YR AVE ³
	US#1	TOTAL	US#1	Bs	As	OV	PO		HH	VD	IBS	BC	TOT	
ITASCA	200	309	65	34	65	0	1	1.066	0	0	0	0	0	182
GOLDRUSH	171	244	70	26	64	6	4	1.065	0	0	0	0	12	
A082611-7	171	329	52	40	51	1	8	1.079	0	0	0	0	2	212*
A84180-8	163	230	71	26	70	1	3	1.075	0	0	0	0	1	
CENTURY R.	129	251	51	49	51	0	0	1.074	0	0	0	0	0	154
C0083008-1	126	177	71	26	71	0	3	1.073	0	0	0	0	0	
A81473-2	125	184	68	31	65	3	1	1.066	1	0	0	0	4	128
CRESTONE R.	120	165	73	24	69	4	3	1.059	0	0	0	0	6	
A82119-3	110	204	54	46	54	0	0	1.072	0	0	0	0	0	121
R. NORKOTAH	110	186	59	39	50	9	2	1.068	4	0	0	0	14	
A7961-1	102	231	44	55	44	0	1	1.079	0	0	0	0	0	128
R. BURBANK	89	252	35	64	35	0	1	1.076	0	0	0	0	0	
A8495-1	83	164	50	48	50	0	1	1.078	0	0	0	0	0	121
RANGER R.	75	154	49	51	49	0	1	1.078	0	0	0	0	0	
LSD	37	46						0.0025						

Harvested Aug. 10, 1994

Table 4. Late Harvest: Long Russets (134 days)

Line	CTW/ACRE		% DISTRIBUTION ¹					SPEC GRAV	INTR. QUALITY ²					MAT	3 YR AVE ³
	US#1	TOTAL	US#1	Bs	As	OV	PO		HH	VD	IBS	BC	TOT		
A81473-2	346	411	84	10	45	39	6	1.079	24	0	0	0	40	5.0	284
CENTURY R.	340	442	77	20	66	11	3	1.081	1	0	0	0	31	4.0	
A82119-3	298	384	78	17	59	19	5	1.082	24	0	0	0	33	4.5	347*
A082611-7	297	421	71	23	62	9	7	1.086	5	0	0	0	30	4.0	
ITASCA	281	389	72	25	67	5	3	1.069	0	0	0	0	20	2.5	300
GOLDRUSH	276	335	83	14	57	25	4	1.072	13	2	0	0	37	2.5	
A7961-1	264	393	67	29	63	4	4	1.085	9	0	0	0	14	3.5	295
A84180-8	256	310	83	11	60	23	7	1.075	21	0	0	0	30	3.0	
C0083008-1	250	310	81	14	69	12	6	1.083	16	0	0	0	22	4.5	197
CRESTONE R.	223	282	79	11	49	30	10	1.069	5	2	0	0	39	3.0	
RANGER R.	218	305	72	24	61	11	4	1.093	5	0	0	0	25	4.0	295
A8495-1	208	293	71	26	61	10	4	1.086	12	0	0	0	21	4.0	
R. BURBANK	205	348	59	35	55	4	6	1.081	6	0	0	0	12	3.0	197
R. NORKOTAH	172	262	66	29	54	12	5	1.07	16	0	0	0	21	2.5	
LSD	61	58						0.003							

¹Size

US#1—A's + OV's

B's—< 2"

A's—2-3.25"

OV—> 2"

²Quality

HH—Hollow Heart

VD—Vascular Discoloration

IBS—Internal Brown Spot

BC—Brown Center

PO—Pick outs

TOT—Total Tubers Cut

³3 Yr Ave—*2 yr data

CWT/ACRE US #1

SFA—Chip SFA Rating

MAT—Maturity Rating

Planted: May 10, 1994

Harvested: Sept. 21, 1994

Table 5. 1994 Adaptation Trial (140 days)

Line	CTW/ACRE		% DISTRIBUTION ¹					SPEC GRAV	SFA	INT. QUALITY ²					MAT
	US#1	TOTAL	US#1	Bs	As	OV	PO			HH	VD	IBS	BC	TOT	
NY101	616	685	90	6	75	15	4	1.078	-	2	0	0	0	40	4.0
NDO1496-1	529	572	93	4	63	30	3	1.089	1.0	14	0	0	0	41	4.0
AC83306-1	491	584	84	5	67	17	10	1.081	3.0	9	5	0	0	40	4.0
ATLANTIC	472	523	90	7	74	16	3	1.095	2.0	17	0	0	0	31	3.5
B0493-8	468	540	87	9	64	22	4	1.078	-	2	0	0	0	37	2.5
B0257-12	457	532	86	4	73	13	10	1.086	3.0	1	0	0	0	40	3.0
B0405-4	418	496	84	7	76	9	9	1.099	2.0	10	1	1	3	27	5.0
AF1470-17	398	563	71	7	50	21	23	1.063	4.5	4	0	4	7	40	2.0
B0564-9	398	453	88	8	67	21	4	1.074	3.5	27	0	0	0	40	3.0
MSA105-1	386	456	85	5	59	25	10	1.081	2.0	29	0	0	0	38	4.0
C080011-5	383	448	86	8	60	25	6	1.068	-	3	0	0	0	40	3.0
B0339-1	362	463	78	20	70	8	2	1.080	-	18	0	0	0	26	2.5
B0585-1	357	448	80	8	65	15	12	1.076	1.5	0	4	0	2	33	2.5
MSB106-8	355	400	89	6	71	18	5	1.084	-	39	0	0	0	40	4.0
SNOWDEN	351	427	82	13	77	5	4	1.088	-	1	0	0	1	20	2.5
B9922-11	350	417	84	12	73	11	4	1.086	-	18	0	0	2	32	4.0
B0174-16	333	408	82	9	74	7	9	1.101	3.0	6	0	0	0	24	2.0
MSC103-2	323	385	84	4	48	36	12	1.075	-	5	0	1	0	40	4.0
NT-1	322	361	89	8	81	9	2	1.092	1.5	8	0	0	1	24	3.5
NDA2031-2	307	453	68	28	66	1	4	1.078	1.0	1	1	0	0	6	3.0
MSC125-1	304	368	83	4	44	38	13	1.079	1.0	1	0	0	1	40	5.0
MSB107-1	301	330	91	5	62	29	4	1.074	1.5	0	0	0	1	40	3.0
B0257-9	300	363	83	6	68	15	11	1.080	1.5	6	0	1	1	27	2.0
MSB094-1	281	356	79	15	69	10	6	1.082	3.0	5	0	0	0	23	3.0
MSB105-3	279	320	87	7	75	13	6	1.078	2.0	0	0	0	0	28	3.0
MSA097-1Y	279	356	79	6	55	23	15	1.075	3.5	0	0	0	0	40	2.0
B0585-5	279	392	71	6	57	14	22	1.075	1.5	23	0	1	0	36	3.0
SUPERIOR	278	353	79	11	73	6	10	1.072	-	4	0	0	0	17	2.0
MSC086-3	276	335	82	9	63	19	9	1.066	3.0	2	0	1	0	39	2.5
AF1433-4	264	330	80	13	61	19	7	1.073	-	0	0	2	0	31	2.0
MSB083-1	256	311	82	14	76	7	4	1.079	2.5	0	0	0	0	17	3.0
MSA091-1	253	364	69	10	54	15	21	1.088	1.5	1	4	1	8	34	3.0
MSA071-1	245	344	71	25	70	1	4	1.090	1.0	0	0	0	0	4	2.0
MSC135-5	237	264	90	7	80	10	3	1.079	1.0	6	0	0	2	22	3.5
MSB1254-1	235	262	89	6	67	22	5	1.083	1.0	0	0	0	1	31	4.0
MSC147-3	230	268	86	8	76	10	6	1.079	3.0	3	1	0	0	14	3.0
MSC029-1R	209	266	79	11	51	28	10	1.084	-	9	0	1	0	40	5.0
MSB095-2	208	258	81	17	71	9	2	1.075	2.0	4	1	0	0	21	2.5
ND860-2	195	294	66	24	66	0	10	1.082	1.5	0	0	0	0	1	1.0
MSB0952-1	188	284	66	31	65	1	3	1.089	3.0	0	0	0	0	5	3.0
MSB110-3	186	238	78	8	63	15	14	1.087	1.5	15	0	0	3	31	4.0
MSB027-1R	169	240	70	18	55	15	12	1.073	-	11	0	1	0	20	1.0
MSC135-2	146	208	70	12	59	12	17	1.070	2.0	10	0	0	0	13	3.0
LSD	77	77						0.0045							

¹Size

US#1—A's + OV's

B's—< 2"

A's—2-3.25"

OV—> 2"

PO—Pick outs

²Quality

HH—Hollow Heart

VD—Vascular Discoloration

IBS—Internal Brown Spot

BC—Brown Center

TOT—Total Tubers Cut

SFA—Chip SFA Rating

MAT—Maturity Rating

Planted: May 9, 1994

Harvested: Sept. 26, 1994

Table 6 Advanced Selections Developed at MSU in Tissue Culture

CLONE		SP GR	USE	SCAB	1995 PLANS
A091-1	RW	1.088	CHIP	MR	GROWER
B076-2	RW	1.097	CHIP	R	GROWER/ REGIONAL
B007-1	OBL	1.076	TABLE	MS	MSU/ REGIONAL
B073-2	RW	1.082	CHIP	MS	MSU TRIALS
B106-7	OBL	1.070	TABLE	MR	MSU TRIALS
B110-3	RW	1.087	CHIP	MR	MSU TRIALS
B095-2	RW	1.075	TABLE	MR	GROWER
B107-1	RW	1.074	TABLE	MS	GROWER
B0952-1	OV	1.089	CHIP	MR	GROWER
B027-1R	RUS	1.073	TABLE	MS	GROWER
B083-1	RW	1.079	CHIP	MR	GROWER

Table 7. MSU Advanced Selections

CLONE	SP GR	SFA	SCAB	MAT	INTERNALS
MSNT-1	1.092	1.5	3.0	3.5	GOOD
C125-1	1.079	1.0	3.0	5.0	EXC
C029-1R	1.084	--	2.5	5.0	GOOD
C135-5	1.079	1.0 CC	2.5	3.5	GOOD
B1254-1	1.083	1.0 CC	2.5	4.0	EXC
A097-1Y	1.075	--	1.5	2.0	EXC
C086-3	1.066	--	2.0	2.5	EXC
B105-3	1.078	2.0	4.0	3.0	EXC
B040-3*	1.072	2.0	1.0	3.0	GOOD
B116-1Y	1.067	--	1.5	1.5	EXC
B057-2	1.075	--	3.0	3.0	GOOD
C084-1	1.074	--	1.5	5.0	EXC
C098-2*	1.075	1.0 CC	2.0	3.0	--
C120-1Y	1.073	--	1.0	4.5	GOOD
C121-7*	1.080	1.5	3.0	2.0	GOOD
C122-1*	1.081	1.0	1.5	2.5	--
C125-8*	1.067	--	1.0	1.5	--
C126-6	1.072	--	2.5	2.5	--
C127-3	1.085	1.0 CC	3.5	3.5	--
C128-1	1.068	--	1.0	4.0	GOOD
C129-9	1.077	--	2.5	3.5	--
C148-1	1.062	--	1.5	4.0	--
D001-3Y*	1.079	--	3.0	3.5	--
D040-3	1.075	1.0 CC	3.0	3.0	GOOD
D040-4Y*	1.092	--	3.0	3.0	--

* - Excellent appearance

CC - cold-chipper

Table 8. European Variety Trial (134 days)

Line	CTW/ACRE		% DISTRIBUTION ¹					SPEC GRAV	SFA	INTR. QUALITY ²					MAT
	US#1	TOTAL	US#1	Bs	As	OV	PO			HH	VD	IBS	BC	TOT	
MORNING GOLD	493	570	87	8	80	6	5	1.076	3.5	11	2	2	0	20	3.0
BRODICK	445	545	82	11	74	7	7	1.080	1.5	19	0	12	0	28	3.0
SANTE	433	538	80	14	77	3	6	1.081	2.5	0	1	0	0	16	2.0
AGRIA	393	502	78	11	69	10	11	1.077	2.0	25	0	0	0	29	3.0
FIANNA	370	474	78	15	76	2	7	1.088	1.0	0	1	0	0	6	2.0
PENTA	366	462	79	15	77	2	5	1.075	3.0	1	3	1	0	7	3.0
MORENE	341	431	79	11	76	4	9	1.084	3.5	3	5	0	0	15	5.0
SPUNTA	328	395	83	6	57	26	11	1.062	-	4	1	0	0	40	2.5
ESTIMA	317	400	79	14	74	5	7	1.073	4.0	0	1	2	0	17	2.0
DESIREE	314	412	76	15	72	4	8	1.080	-	1	0	0	0	14	3.0
DUNDROD	309	389	79	17	74	6	4	1.067	1.5	1	0	0	0	16	2.0
AVANTI	270	398	68	28	67	1	4	1.066	2.5	1	0	0	0	2	3.0
SAGINAW GOLD	269	346	78	17	74	4	5	1.077	2.0	0	0	0	0	12	1.0
MICHIGOLD	266	348	76	19	70	6	5	1.086	-	3	1	1	1	10	1.5
YUKON GOLD	233	276	85	10	69	15	6	1.077	-	15	5	1	0	20	1.0
HERTHA	171	313	55	38	55	0	8	1.084	1.5	0	0	0	0	0	3.0
LSD	80	84						0.003							

¹Size

US#1—A's + OV's

B's—< 2"

A's—2-3.25"

OV—> 2"

PO—Pick outs

²Quality

HH—Hollow Heart

VD—Vascular Discoloration

IBS—Internal Brown Spot

BC—Brown Center

TOT—Total Tubers Cut

SFA—Chip SFA Rating

MAT—Maturity Rating

Planted: May 10, 1994

Harvested: Sept. 21, 1994

Table 9. Upper Peninsula Trial (141 days)

Line	CTW/ACRE		PERCENT DISTRIBUTION ¹					SPEC GRAV
	US#1	TOTAL	US#1	Bs	As	OV	PO	
PRESTILE	433	453	96	2	74	22	2	1.077
AC PTARMIGIN	404	419	97	2	64	33	1	1.073
RANGER RUSSET	368	399	92	6	62	30	2	1.081
A84180-8	360	389	93	7	72	21	0	1.080
RUSSET BURBANK	352	389	91	8	65	25	2	1.080
GOLDRUSH	349	368	95	5	68	27	0	1.074
COO83998-1	343	350	98	2	61	37	0	1.083
PORTAGE	343	382	90	10	76	14	0	1.079
A7961-1	323	336	96	4	71	25	0	1.088
CRESTONE RUSSET	307	331	93	8	78	14	0	1.073
RUSSET NORKOTAH	250	260	96	3	71	25	1	1.076
CHALEUR	146	159	92	8	83	9	0	1.076

¹Size

US#1—A's + OV's

B's—< 2"

A's—2-3.25"

OV—> 2"

PO—Pick outs

Planted: May 14, 1994

Harvested: Oct. 3, 1994

Table 10. 1994 Fusarium Dry Rot Evaluations

CLONE	RATING						
34-6 (2x)	0.0	A8495-1	3.1	RANGER R	5.3	B0585-1	7.4
ND860-2	0.2	BRODICK	3.1	AC83306-1	5.4	MSB083-1	7.4
P88-15-1	0.2	LEMHI R	3.1	MSC086-3	5.4	MSC135-5	7.5
B0257-9	0.3	MSA071-1	3.1	AC PTARMIGIN	5.5	MSB107-1	7.6
MSC125-8	0.4	P88-9-8	3.1	AF1060-2	5.5	CRESTONE R	7.7
151-16 (2x)	0.5	193-16 (2x)	3.1	FL1839	5.5	HERTHA	7.7
SNOWDEN	0.5	144-06 (2x)	3.2	MSB0952-1	5.5	191-11 (2x)	7.8
133-103 (2x)	0.6	NORCHIP	3.2	W1100R	5.5	ATLANTIC	7.8
B9922-11	0.6	MSNT-1	3.3	133-208 (2x)	5.7	HLG1-2	7.8
P88-13-4	0.8	P88-12-4	3.3	A82119-3	5.7	ST. JOHNS	7.9
P84-13-12	0.9	PEMBINA CHIPPER	3.3	FIANNA	5.7	W5337-3 (2x)	7.9
W1149	0.9	MS716-15	3.4	B0339-1	5.8	HLG-T450	8.0
MSC129-9	1.0	MSD040-4RY	3.4	M6 (2x)	5.8	NY102	8.0
R. NORKOTAH	1.0	MSB054-4	3.6	MSB110-3	5.8	W2595-7	8.2
SUPERIOR	1.0	MSC121-7	3.6	MSB027-1R	5.9	ESTIMA	8.3
B0257-12	1.1	MSB049-1	3.7	133-10 (2x)	6.0	HLG-120	8.4
MSC126-6	1.1	SUPERIOR	3.7	B0405-4	6.0	MICHIGOLD	8.5
MSA089-1	1.2	ATLANTIC	3.8	MN13540	6.0	NIPIGON	8.5
MSC148-1	1.2	FL1833	3.8	MSC125-1	6.0	SPUNTA	8.5
133-227 (2x)	1.4	MSB094-1	3.8	A81473-2	6.1	HLG-297	8.6
SUPERIOR	1.4	MSD016-6	3.8	MORENE	6.1	NDA2031-2	8.6
MIRTON PEAR	1.5	MSC086-7	4.0	FL1533	6.2	MSC103-2	8.7
AGRIA	1.8	MSD024-2RD	4.0	MSD001-3Y	6.2	PRESTILE	8.8
MSC029-1R	1.8	C0083008-1	4.2	A082611-7	6.3	B0493-8	8.9
34-8 (2x)	1.9	MSB1254-1	4.2	MSA097-1Y	6.3	CHALEUR	8.9
PENTA	1.9	MORNING GOLD	4.4	AVANTI	6.4	SAGINAW G	9.0
A84180-8	2.0	MSB095-2	4.4	Y245-7	6.4		
ONAWAY	2.1	CENTURY R	4.5	DUNDROD	6.5		
HLG-244	2.2	ONAWAY	4.5	MSC147-3	6.5		
P83-6-18	2.2	YUKON GOLD	4.5	MSB116-1Y	6.6		
B0585-5	2.3	HLG-1-1	4.6	AC NOVACHIP	6.7		
ITASCA	2.3	MSB076-2	4.6	ATLANTIC	6.8		
SNOWDEN	2.3	ND2417-6	4.6	RED RUBY	6.8		
A7961-1	2.6	133-143Y (2x)	4.7	AF875-15	6.9		
MSB040-3	2.6	B0564-9	4.7	C080011-5	6.9		
132-238 (2x)	2.7	MSA105-1	4.7	PORTAGE	6.9		
AF1433-4	2.7	013-19 (2x)	4.8	MSB106-8	7.0		
GOLDRUSH	2.7	133-17 (2x)	4.8	NDO1496-1	7.0		
MS700-70	2.7	MSC135-2	4.8	MSB007-1	7.1		
MSA091-1	2.8	SANTE	4.8	NY84	7.1		
ND2471-8	2.8	DESIREE	4.9	NY95	7.1		
B0174-16	3.0	MSC120-1Y	5.1	AF1470-17	7.2		
MSB123-5	3.0	W1099	5.1	R. BURBANK	7.2		
MSD018-2RD	3.0	NY101	5.3	MSB105-3	7.3		

0 = no infection

9 = complete infection

Table 11. 1994 Scab Trial

CLONE	RATING						
A7961-1	1.0	AF875-15	2.0	AVANTI	3.0	AC NOVACHIP	4.0
A8143-2	1.0	B0564-9	2.0	B0257-9	3.0	AF1060-2	4.0
AF1433-4	1.0	DR NORLAND	2.0	FIANNA	3.0	AF1470-17	4.0
B9922-11	1.0	FONTENOT	2.0	FL1833	3.0	B0257-12	4.0
BO339-1	1.0	HERTHA	2.0	MC.BLACK	3.0	B0493-8	4.0
BRODICK	1.0	MICHIGOLD	2.0	MSA071-1	3.0	ESTIMA	4.0
C0008011-5	1.0	MIRTON PEARL	2.0	MSB007-1	3.0	MS716-15	4.0
C0083008-1	1.0	MN13540	2.0	MSB027-1R	3.0	MSA105-1	4.0
LEMHI R.	1.0	MORENE	2.0	MSB057-2	3.0	MSB105-3	4.0
MN15220	1.0	MS700-70	2.0	MSB100-3	3.0	MSC121-8	4.0
MSB040-3	1.0	MSA089-1	2.0	MSC086-7	3.0	ND2471-8	4.0
MSB076-2	1.0	MSA091-1	2.0	MSC103-2	3.0	NIPIGON	4.0
MSB106-7	1.0	MSA110-2	2.0	MSC121-7	3.0	RANGER R.	4.0
MSC120-1Y	1.0	MSB094-1	2.0	MSC125-1	3.0	ROSE GOLD	4.0
MSC125-8	1.0	MSB0952-1	2.0	MSD001-3Y	3.0	ND01496-1	4.5
MSC128-1	1.0	MSB095-2	2.0	MSD016-6	3.0	RED GOLD	4.5
ONAWAY	1.0	MSB123-5	2.0	MSD024-2	3.0	B0585-1	5.0
P84-13-12	1.0	MSC086-3	2.0	MSD040-3	3.0	MSC024-2	5.0
PEMBINA CHIPPER	1.0	MSC098-2	2.0	MSD040-4	3.0	MSC123-8	5.0
PRESTILE	1.0	MSC116-4	2.0	NDA2031-1	3.0	R.PONTIAC	5.0
RED RUBY	1.0	MSC147-3	2.0	MSNT-1	3.0		
SUPERIOR	1.0	NY102	2.0	P88-12-4	3.0		
A8495-1	1.5	R.BURBANK	2.0	P88-9-8	3.0		
AC PTARMIGIN	1.5	SNOWDEN	2.0	PENTA	3.0		
CHALEUR	1.5	A082611-7	2.5	RUSSIAN BLUE	3.0		
CRESTONE R.	1.5	A82119-3	2.5	SAG.GOLD	3.0		
GOLDRUSH	1.5	ATLANTIC	2.5	ST.JOHNS	3.0		
MN15111	1.5	B0585-5	2.5	W1100R	3.0		
MSA097-1Y	1.5	CENTURY R.	2.5	W1149	3.0		
MSB049-1	1.5	DUNDR0D	2.5	AC83306-1	3.5		
MSB083-1	1.5	FL1533	2.5	AGRIA	3.5		
MSB110-3	1.5	FL1839	2.5	B0174-16	3.5		
MSB116-1Y	1.5	ITASCA	2.5	B0405-4	3.5		
MSC084-1	1.5	MN12823	2.5	MSC118-1	3.5		
MSC108-2	1.5	MORN. GOLD	2.5	MSC127-5	3.5		
MSC122-1	1.5	MSB106-8	2.5	MSD018-2RD	3.5		
MSC135-2	1.5	MSB107-1	2.5	MSD030-3	3.5		
MSC148-1	1.5	MSB1254-1	2.5	ND2417-6	3.5		
NORCHIP	1.5	MSC029-1R	2.5	ND860-2	3.5		
NY101	1.5	MSC126-6	2.5	P83-6-18	3.5		
NY84	1.5	MSC129-9	2.5	PORTAGE	3.5		
NY95	1.5	MSC135-5	2.5	SANTE	3.5		
P.VIKING	1.5	P88-15-1	2.5				
R.NORKOTAH	1.5	W1099	2.5				

1 = Little to no infection

5 = > 25% surface coverage with deep pits

Nebraska Potato Variety Trials
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Introduction

In 1994, three tablestock (red and russet cultivars) and chipstock (white) trials were conducted. Nebraska also participated in the North Central Regional (NCR) trials. The tablestock trials were conducted at Central City, Madrid and west of Alliance. The chipstock trials were conducted at Central City, and east and west of Alliance. The NCR trial was conducted west of Alliance. The Central City trials were not usable due to poor field conditions. There were four red, 10 russet, three long white and 14 round white-skinned varieties in the Nebraska trials, and 15 entries in the NCR trial.

Materials, Methods and Conditions

All trials were conducted on farm sites under center-pivot irrigation; 10 to 20 inches were added in addition to normal rainfall. Fertilization ranges were 100 to 250 lb N/ac, 65 to 100 lb P/ac, 0 to 40 lb K/ac and 15 to 90 lb S/ac; Low levels of Mn and Zn were added in west Alliance. Seed pieces were cut, treated with TOPS2.5D and stored for three to 14 days at 55 F. Growers used their conventional practices. Insecticides were Thimet applied at planting and post-emergence applications of various products -- Asana, Monitor, Pounce, or Thiodan. Turbo applied pre-emergence was the standard herbicide; Eptam and Poast were applied post-emergence. Besides the seed treatment, Bravo, Champ, Dithane, Maneb and Ridomil were used for early or late blight. Vines were desiccated with Diquat and/or mechanical beating.

The trial design in the tablestock and chipstock trials was 100 foot strip plots from which three 12-foot samples were taken; the NCR trial design was that of the accepted protocol -- four replicates of 25 plants in a randomized-complete-block (Secor et al. 1993). The key growth dates for all trials are listed in Table 1. Note that the trial in east Alliance had a shorter than normal season.

All trials were under center-pivot irrigation. Rainfall was about normal. In Eastern Nebraska, there was heavy rain in the spring which delayed planting. The Central City trial was deemed of limited use due to a flooded condition and therefore the data are not reported. Temperature was slightly below normal in the west and slightly above normal in the east. There was no hail in the west and below normal hail in the east. Little late blight occurred, almost exclusively in non-Ridomil-treated fields.

Yield data were taken on tubers under 1½ in, between 1½ and 4 in, and over 4 in sizes. Within a week after harvest, tuber defects and specific gravities on 1½ to 4-inch tubers were determined visually and using a hydrometer, respectively. Chip and fry color were measured using an Agtron E-10. Color was determined after curing for one month at 55-60 F.

Table 1. Key dates for each trial in 1994.

	west Alliance	east Alliance	Madrid
P	5/19	5/27	4/22
E	6/ 8	6/14	5/19
D	9/ 9	8/23	8/17
H	9/24	9/ 3	8/17
days:			
P-H	128	100	117
E-D	93	70	90

P = planting, E = emergence,
 D = vine desiccation, H = harvest.

Results and Discussion

Tablestock trials

As in 1993 (Pavlista, 1993), Red LaSoda and ND1871-3R had good yields and percent of US #1 tubers among red-skinned potatoes (Table 2). Both entries tended to have large tubers. Fontenot (LA12-59) had the highest specific gravity as in past years. Red LaSoda and W1100R had above average common scab in west Alliance. Few defects occurred in Madrid.

The best yields of a russet-skinned potato were obtained with A82611-7 (Table 2). Specific gravity above 1.090 was observed in both Alliance and Madrid with Ranger Russet, A82611-7 and W1005. The latter, W1005, tended to

have small, long and thin tubers. In 1993, Ranger Russet and W1005 also had the highest specific gravities (Pavlista, 1993). In the Nebraska Panhandle, Ranger Russet had above average common scab, Russet Burbank had black scurf, and Shepody, a long white, had both (Table 2). Ranger Russet remains among the best russet cultivars and is a good standard (Pavek and Corsini, 1992).

Chipstock trials

Good yielding chipping entries in the Nebraska Panhandle were Atlantic, Chipeta, Coastal Chip, Monona, Norchip, and ND2471-8 (Table 3). The highest specific gravities were obtained from Atlantic, MaineChip, A80559-2, A83306-1, MS700-70 and ND2471-8. Kennebec and A83306-1 had the darkest chip color after harvest (one month preconditioning/curing period at 60F). Chipeta, Norchip and Portage had a lower chip color rating than the rest. The lightest chips came from MaineChip and Snowden. Chipeta tended to oversize as in the past (Holm and Pavlista, 1993). Overall the best numbered entry seemed to be ND2471-8.

In west Alliance, common scab was high in seven entries and in east Alliance, it high in Portage, Snowden and A80559-2 (Table 3). Black scurf was high in Coastal Chip, A80559-2 and A83306-1 at both locations. Mainechip had hollow heart in east Alliance.

North Central Regional Trial

There were 15 entries in the 1994 NCR trials which was conducted in Box Butte County, Nebraska. The yields were higher than last year (Pavlista, 1993). Among russet potatoes, Russet Norkotah and W1099 Russ outyielded Russet Burbank. The russet entries had the severest common scab. The highest yielding red/purple entries were MN15220 (purple) and Red Pontiac, both tended to oversize. Red Pontiac had the most number of scabby tubers and MN15220 was very knobby. The highest yielding white entries were MN13540, MN12823 and Norchip. The highest specific gravities were obtained from ND2471-8 and W1149, and the best chip color ratings were from Norchip, P84-9-8 and ND2471-8. Nearly half the tubers of P84-9-8 had common scab. Many tubers of Norchip and W1149 had growth cracks.

References

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- Secor, G.A., Farnsworth, B. and cooperators. 1993. North Central Regional Potato Trials. In K.G. Haynes, ed., National Potato Germplasm Evaluation and Enhancement Report, pp. 21-31. U.S. Department of Agriculture, Agricultural Research Service, Beltsville, MD.

Table 2. Yield and tuber quality of tablestock potato entries, 1994.

Entries	Yield US#1 cwt/ac	US#1 as % total	Specific Gravity	Chip Color	Common Scab % tubers (	Black Scurf % tubers (
west Alliance --						
Red LaSoda #	288	96	1.080	44	30 (50	0
Fontenot #	222	98	1.084	53	3 (10	0
ND1871-3R #	390	96	1.076	37	6 (10	0
W1100R #	228	92	1.068	59	20 (25	2 (10
Century Rus. *	252	95	1.088	53	15 (15	9 (10
Krantz *	282	98	1.086	71	3 (10	9 (15
Rus. Norkotah *	426	99	1.075	47	10 (50	7 (10
Ranger Rus. *	378	99	1.094	52	24 (85	10 (15
Rus. Burbank *	324	98	1.088	61	4 (10	25 (15
A7961-1 *	216	98	1.087	62	2 (5	6 (10
A82611-7 *	390	95	1.099	46	3 (5	6 (5
C83008-1 *	300	99	1.094	60	2 (5	2 (10
W1005 *	174	92	1.093	65	6 (5	3 (10
W1099 *	234	98	1.070	61	4 (10	0
Itasca +	264	97	1.085	60	4 (5	7 (5
Shepody +	342	99	1.095	63	30 (80	20 (20
location means:	294	97	1.085	56	10 (24	7 (11
Madrid --						
Red LaSoda #	237	98	1.070	.	0	0
Fontenot #	207	97	1.078	.	0	0
ND1871-3R #	186	91	1.072	.	0	0
W1100R #	219	87	1.065	.	0	0
Century Rus. *	144	80	1.075	60	0	0
Krantz *	252	97	1.073	63	0	0
Rus. Norkotah *	222	91	1.075	58	0	0
Ranger Rus. *	216	87	1.098	59	0	0
Rus. Burbank *	168	78	1.075	51	0	0
A7961-1 *	234	95	1.088	59	0	0
A82611-7 *	348	90	1.090	61	0	0
C83008-1 *	144	92	1.085	64	0	0
W1005 *	237	73	1.095	49	0	0
W1099 *	186	89	1.075	45	0	0
Itasca +	336	89	1.071	55	0	0
Shepody +	192	91	1.080	65	0	0
location means:	220	90	1.079	57	0	0

(= percent of tuber surface area covered.

= red-skinned entry; * = russet-skinned entry; + = long, white-skinned entry.

Table 3. Yield and tuber quality of chipstock potato entries, 1994.

Entries	Yield US#1 cwt/ac	US#1 as % total	Specific Gravity	Chip Color	Common Scab % tubers (	Black Scurf % tubers (
west Alliance --						
Atlantic	498	98	1.101	66	30 (50	6 (10
Chipeta	420	98	1.084	60	9 (10	10 (10
Coastal Chip	384	98	1.083	64	30 (40	20 (50
Kennebec *	258	97	1.082	57	30 (10	6 (<5
Mainechip	390	99	1.099	67	30 (5	8 (10
Monona	426	99	1.076	61	31 (10	5 (10
Norchip	438	97	1.086	60	10 (10	8 (10
Portage	.	.	.	.	.	.
Snowden	258	93	1.086	71	21 (15	12 (15
A80559-2	336	98	1.100	67	10 (5	30 (25
A83306-1	360	98	1.090	59	30 (60	30 (70
MS700-70	318	94	1.093	65	20 (10	11 (<5
ND2417-6	348	96	1.079	62	16 (10	6 (<5
ND2471-8	444	97	1.090	61	31 (50	10 (<5
NYE55-35	.	.	.	.	.	.
location means:	375	98	1.088	63	23 (22	12 (18
east Alliance --						
Atlantic	204	100	1.087	66	4	8 (5
Chipeta	180	96	1.075	56	4	12 (10
Coastal Chip	288	96	1.080	70	8	25 (5
Kennebec *	240	98	1.070	35	1	8 (5
Mainechip	258	98	1.080	73	0	20 (5
Monona	294	97	1.065	57	0	10 (25
Norchip	240	97	1.073	60	0	10 (5
Portage	240	98	1.065	59	4	12 (5
Snowden	186	98	1.078	70	1	8 (10
A80559-2	168	98	1.089	73	2	25 (5
A83306-1	198	95	1.065	47	0	25 (40
MS700-70	198	98	1.076	69	2	10 (5
ND2417-6	216	98	1.080	67	0	5 (25
ND2471-8	240	96	1.075	65	8	10 (5
NYE55-35	138	93	1.083	63	0	15 (5
location means:	219	98	1.076	62	8 (<5	14 (11
(= percent of tuber surface area covered.						
+ = long, white-skinned entry, rest = round, white-skinned entries.						

New Jersey

Melvin R. Henninger

Introduction

All trials were conducted at the Rutgers Research & Development Center near Bridgeton, NJ in Upper Deerfield Township. All plots were 21' long and 3' wide. Seedpieces were spaced at 9" for round types and 12" for long types. Five hundred lbs./A of 10-10-10 was broadcast and disk-in before planting. Dual and sencor were applied 15 days after planting. Additional 100 lbs./A nitrogen was topdressed 5 weeks after planting.

All plots were harvested with a single-row mount commercial harvester modified for bagging. No attempt was made to recover any lost tubers caused by normal harvester operation. All plots were sized with a spool sizer and specific gravities were determined by weight in air and water. Chip color was done by Mr. Steve Molnar of Wise Foods five and ten days after harvest.

In 1994, planting was delayed two weeks because of wet conditions. June was hotter and drier than normal. July was hot and wet. August was wet and cool. Rainfall was supplemented by irrigations. Growth through-out the season was good. The late heavy rains caused varying degrees of tuber rot, heat sprouts, second growth, and severe internal heat necrosis problems.

Colorado potato beetles were not a problem this season but controls were needed. Other insects and diseases were not a problem and did not limit growth.

To simplify above information, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named.

NJ Variety Table 1. Yields, Specific Gravities, and Tuber Sizes for 30 Round White Potato Varieties, Harvested Main Season and Grown on a Sandy Loam Soil at the Rutgers Research & Dev. Center - Upper Deerfield, New Jersey - 1994 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
AF1470-17	ne	572	479	129	1.053	86	20	3	14	66	15	5	0	
Chipeta	ne	489	450	121	1.063	96	63	5	4	33	45	18	0	
Atlantic	ne	498	438	118	1.076	91	35	3	9	56	32	3	0	
NY E11-45	ne	501	436	118	1.058	89	20	2	11	68	19	2	0	
AF 875-15	ne	484	431	116	1.071	92	18	3	8	74	17	1	0	
B0257-12	ne	473	422	114	1.067	91	38	2	9	53	35	3	0	
B0564- 9	ne	492	418	113	1.060	87	23	2	13	64	22	2	0	
NY 84	ne	490	418	113	1.053	89	37	4	11	52	31	7	0	
Sunrise	ct	468	412	111	1.066	91	33	3	9	58	30	3	0	
ND2471-8	ne	482	408	110	1.073	88	17	3	12	71	17	0	0	
St. Johns	ne	446	405	109	1.061	93	34	3	7	59	28	6	0	
NY 87	ne	462	399	108	1.065	88	14	1	12	73	13	1	0	
Snowden	ne	458	398	107	1.073	87	22	0	13	65	20	2	0	
AF 875-15	ne	437	385	104	1.074	91	17	3	9	74	16	0	0	
AF1433- 4	ne	439	380	102	1.060	90	31	4	10	59	26	5	0	
B0635- 6	ne	453	376	101	1.068	84	6	1	16	78	6	0	0	
B0178-34	ne	459	374	101	1.080	84	14	3	16	70	13	1	0	
NY E55-35	ne	428	370	100	1.076	87	15	0	13	72	14	2	0	
Superior	ne	436	369	100	1.061	87	15	3	13	72	12	3	0	
Katahdin	ne	414	369	100	1.052	91	29	2	9	62	27	3	0	

NJ Variety Table 1. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
					1	7/8	2 1/2		1	2	3	4	5
B0564-8	ne	466	359	97	1.065	81	13	4	19	68	11	1	0
ND2417-6	ne	473	355	96	1.064	76	9	3	24	67	9	1	0
Novachip	ct	461	347	94	1.069	90	18	16	10	72	16	2	0
B0585-5	ne	377	346	93	1.066	94	40	2	6	54	35	5	0
AF1452-28	ne	431	326	88	1.060	92	25	18	8	67	25	0	0
Norchip	ne	401	322	87	1.069	85	13	6	15	72	12	1	0
Kennebec	ne	448	315	85	1.060	78	10	9	22	68	9	1	0
NY E55-44	ne	374	309	83	1.065	83	8	1	17	75	8	0	0
NY E55-44	ne	369	303	82	1.064	83	7	0	17	75	7	0	0
F80054	ne	272	186	50	1.082	70	5	2	30	65	5	0	0
Grand Mean		449	377		1.066	87	22	4	13	65	19	3	0
C.V.(4)		9	11		4.	4	25						
W-D LSD .05		54	54		.004	4	7	3	4	7	7	3	ns

(1) All plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/21 and harvested on 8/8.

(2) ct = Certified Seed, ne = NE Regional Project.

(3) Size1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) C.V. = Coefficient of Variation; W-D Bayes LSD .05 = Waller Duncan Test For Least Significant Difference. ns = non significant.

NJ Variety Table 2. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1994 (1).

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS						OVER ALL CC	Comments		
	A p	A p	M t	S S	C l	T x	S h	D p	A p	S G	G C	H S	H S	H N	R				
AF1470-17	8	4	5	6	8	7	3	6	7	8	9	8	9	5	17	6	no	79	heat nec.
Chipeta	8	7	8	7	8	7	2	7	7	8	9	8	9	2	4	7	yes	79	low gravity
Atlantic	8	5	6	6	7	6	2	8	8	8	9	8	9	5	36	5	yes	55	bad heat nec.
NY Ell-45	8	3	3	4	8	7	3	5	7	8	7	8	7	1	6	7	yes	56	bright white
AF 875-15	7	3	4	6	8	7	2	6	7	9	9	9	9	0	6	6	yes	34	early chipper
B0257-12	7	6	5	7	8	7	3	7	8	8	9	8	9	0	11	6	yes	46	heat nec.
B0564- 9	7	4	4	8	7	7	2	7	8	9	9	9	9	0	7	5	yes	34	scab, heat nec.
NY 84	8	7	8	6	8	8	2	7	7	8	9	8	9	0	3	6	yes	56	nice fresh market
Sunrise	6	6	4	6	7	7	2	6	7	8	9	8	9	0	4	6	yes	56	nice tubers
NND2471-8	8	5	6	9	8	8	2	6	7	8	8	8	9	0	0		yes	48	some scab
St. Johns	8	3	6	6	8	8	3	7	6	7	9	7	9	0	0		ok	57	bruises easy
NY 87	8	5	6	6	8	7	3	7	8	6	9	6	9	3	10	6	yes	34	good chips
Snowden	8	7	9	6	7	6	2	8	8	9	9	9	9	0	5	7	yes	23	small, nice chip
AF 875-15	7	4	5	6	8	8	2	6	8	8	9	8	9	0	0		yes	45	chipper
AF1433- 4	7	5	8	5	8	7	2	6	8	9	9	9	9	0	7	6	yes	34	heat sprouts
B0635- 6	7	4	5	8	7	6	2	8	8	8	9	7	9	0	4	7	ok	36	small
B0178-34	8	6	7	6	8	8	2	6	7	7	8	7	9	0	4	7	yes	47	scab
NY E55-35	7	6	8	7	7	7	2	7	7	8	8	8	9	0	7	8	ok	45	chipper
Superior	6	4	3	7	7	6	4	7	7	7	8	7	9	0	7	7	std	67	misshapen
Katahdin	7	5	6	5	8	7	2	5	8	8	9	8	9	0	9	5	std	78	nice appearance

NJ Variety Table 2. (continued).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER		Comments			
	A	A	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R		ALL	CC	
B0564- 8	7	5	5	5	8	8	7	6	1	9	8	6	9	9	9	0	0	0	0	0	yes	35	nice, but small
ND2417-6	8	6	8	8	8	8	8	8	3	5	7	8	9	9	9	0	19	6	6	no	45	heat nec.	
Novachip AC	8	7	9	5	8	8	8	8	5	6	3	4	8	9	9	2	1	8	8	no	46	rough, defects	
B0585- 5	6	5	6	7	7	6	7	6	3	6	7	7	7	9	4	5	5	5	ok	34	heat nec.		
AF1452-28	7	5	6	6	5	8	7	7	7	7	2	7	6	9	0	6	6	6	no	46	misshapen		
Norchip	6	3	3	7	8	7	8	7	2	6	5	7	8	9	9	0	18	6	std	66	heat nec.		
Kennebec	8	7	6	6	8	8	8	8	4	6	5	2	6	9	9	0	1	8	std	79	poor in NJ		
NY E55-44	7	4	4	7	7	6	7	6	2	7	7	9	9	9	9	2	3	7	no	33	nice, low yield		
NY E55-44	6	3	4	8	7	7	7	7	2	7	8	9	9	9	9	0	0	0	no	24	poor yield		
F80054	3	5	5	8	7	6	7	6	3	6	7	8	9	9	9	0	7	7	no	66	small, yel fl		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

NJ Variety Table 3. Yields, Specific Gravities, and Tuber Sizes for 30 Round White Potato Varieties, Harvested Main Season and Grown on a Sandy Loam Soil at the Rutgers Research & Dev. Center - Upper Deerfield, New Jersey - 1994 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
Portage	ct	595	472	135	1.063	88		27	10	12	60	24	3	0
AF1569- 2	me	486	443	127	1.064	92		40	1	8	52	34	6	0
Atlantic	ne	490	431	123	1.076	90		39	2	10	51	32	7	0
B0856- 4	cf	496	430	123	1.053	88		19	2	12	69	18	1	0
NY 101	ny	495	430	123	1.062	90		37	3	10	53	32	5	0
W 870	ct	472	426	122	1.077	92		33	2	8	59	27	6	0
B1014- 5	cf	440	414	118	1.070	94		34	0	6	60	31	3	0
Langlade	ct	453	409	117	1.056	94		47	4	6	47	35	13	0
NY 103	ny	460	395	113	1.062	90		39	5	10	52	34	4	0
B0763-15	cf	406	369	106	1.064	94		59	3	6	34	42	17	0
AF1609- 1	me	426	365	104	1.058	88		38	2	12	50	29	9	0
St. Johns	ct	402	362	104	1.060	93		45	3	7	48	34	10	1
B0178-30	cf	424	351	100	1.077	88		23	6	12	65	23	1	0
B0587- 9	cf	399	351	100	1.070	89		33	2	11	56	28	5	0
B0717- 1	cf	403	350	100	1.067	87		16	0	13	71	15	1	0
Superior	ne	398	348	100	1.061	90		18	3	10	72	18	0	0
NY 99	ny	390	348	100	1.065	91		25	2	9	66	20	5	0
Norwis	ct	367	345	99	1.055	95		44	1	5	51	35	9	0
Somerset	ct	423	342	98	1.074	82		9	2	18	74	9	0	0
AF1612-20	me	367	333	95	1.065	93		31	2	7	62	28	3	0

NJ Variety Table 3. (Continued).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
AF1569-3	me	373	331	95	1.061	90	27		1	10	63	22	5	0
B1158-4	cf	365	320	91	1.060	91	61		4	9	30	38	23	0
B1016-3	cf	508	302	86	1.062	76	6		22	24	70	6	0	0
NY 98	ny	389	301	86	1.054	85	33		8	15	52	30	3	0
B1158-11	cf	331	299	85	1.064	92	51		1	8	41	45	6	0
AF1556-14	me	325	299	85	1.063	93	41		1	7	52	36	5	0
NY 102	ny	336	289	83	1.064	87	20		2	13	67	18	2	0
AF1527-3	me	335	275	79	1.062	89	19		8	11	70	18	1	0
Kanona	ct	309	234	67	1.060	92	43		18	8	49	39	4	0
NY 95	ny	295	230	66	1.074	80	8		2	20	72	8	0	0
Grand Mean		412	353		1.064	90	32		4	10	57	27	5	0
C.V. (4)		9	9		4.	4	23							
W-D LSD .05		46	43		.003	5	10		3	5	9	8	6	ns

(1) All plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/21 and harvested on 8/8.

(2) cf = USDA Chapman Farm, ct = Certified Seed, me = University of Maine, ne = NE Regional Project, and ny = Cornell University.

(3) Size1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) C.V. = Coefficient of Variation; W-D Bayes LSD .05 = Waller Duncan Test For Least Significant Difference. ns = non significant.

NJ Variety Table 4. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1994 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER	Comments			
	A	P	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H			N	R	
Portage	8	5		4	4		8	7	2	6	7	3	7	7			0	12	6	no	58	heat necrosis
AF1569- 2	6	5		6	6		7	6	3	8	8	9	9	9			0	17	6	yes	45	heat nec. nice
Atlantic	7	5		6	6		7	6	2	8	8	8	8	9			7	38	5	std		
B0856- 4	8	4		4	6		8	8	2	6	7	9	9	9			1	1	7	yes	57	nice but small
NY 101	8	5		6	6		7	6	2	6	7	6	9	9			0	21	6	no	56	heat nec. yel fl
W 870	9	6		6	5		8	8	2	4	6	9	9	9			2	16	7	yes	33	early flat chips
B1014- 5	8	5		9	7		7	6	3	6	8	9	9	9			3	13	7	yes	55	ok but small
Langlade	8	6		8	5		8	8	2	8	7	6	7	8			0	26	6	no	57	heat necrosis
NY 103	7	4		5	4		7	7	5	6	5	7	9	9			1	8	7	ok	57	scab oblong
B0763-15	7	4		6	5		7	7	2	8	8	7	9	8			0	4	7	yes	46	nice tubers
AF1609- 1	7	3		4	5		8	8	2	6	6	7	9	9			1	7	6	no	45	so-so
St. Johns	8	5		6	4		8	7	3	5	6	8	9	9			5	0		ok		so-so
B0178-30	8	6		7	5		8	8	3	5	7	5	9	5			0	15	6	no	56	heat necrosis
B0587- 9	6	4		6	7		7	6	1	8	8	9	9	9			1	23	6	no		heat necrosis
B0717- 1	8	3		6	7		7	8	2	8	8	8	9	9			0	0		yes	33	nice chip color
Superior	7	4		3	8		7	5	3	7	7	7	9	8			0	5	7	std		
Norwis	7	4		5	3		8	8	2	5	6	9	9	9			1	6	7	yes	43	low gravity
NY 99	7	5		5	7		7	6	5	6	6	8	9	9			0	34	5	no	67	bad heat necrosis
Somerset	8	5		5	3		8	8	6	7	7	9	9	9			0	7	6	no	56	no seed avail.
AF1612-20	5	5		7	6		8	8	2	5	7	8	9	9			0	28	6	no		bad heat necrosis

NJ Variety Table 4. (continued).

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS					OVER		Comments		
	A	A	P	M	S	C	T	S	D	A	S	G	H	H	H			
AF1569-3	7	3		5	7	7	7	3	7	7	8	9	9	3	1	7	no	low yield
B1158-4	6	5		4	5	7	6	5	6	6	8	5	9	0	0		no	35 gr. cracks, big
B1016-3	9	5		9	6	7	6	6	6	4	1	6	9	0	4	6	no	all second growth
NY 98	8	4		5	7	8	8	3	6	6	5	9	9	1	9	7	no	55 second growth
B1158-11	5	6		7	6	8	8	2	8	7	8	8	9	0	0		no	34 low yield
AF1556-14	5	2		2	6	7	7	2	8	8	8	9	9	0	0		no	35 low yield
NY102	7	4		4	7	7	7	1	8	8	9	7	9	0	4	7	no	34 so-so
AF1527-3	5	5		6	6	7	7	3	7	6	7	8	9	1	17	7	no	56 poor yield
Kanona	6	2		4	7	8	7	2	8	7	9	9	9	0	5	8	no	33 bad scab
NY 95	8	4		7	6	7	6	3	6	6	9	9	9	0	14	5	no	56 heat necrosis

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

NJ Variety Table 5. Yields, Specific Gravities, and Tuber Sizes for 30 Round White Potato Varieties, Harvested Late Season and Grown on a Sandy Loam Soil at the Rutgers Research & Dev. Center - Upper Deerfield, New Jersey - 1994 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% Over			% Culls	% Tuber Sizes (3)					
			cwt/a	% of Sup.		1	7/8	2		1/2	1	2	3	4	5
AF1060-2	ne	671	546	170	1.056	85	15	5	15	15	70	14	2	0	
NY E11-45	ne	542	478	149	1.052	92	20	4	8	8	72	18	2	0	
Portage	ct	620	470	146	1.059	90	24	16	10	10	66	20	3	0	
Chipeta	ne	591	469	146	1.058	89	54	10	11	11	35	38	16	0	
Langlade	ct	532	464	145	1.056	94	51	7	6	6	43	40	11	0	
NY 84	ne	551	454	141	1.052	91	38	9	9	9	52	30	8	0	
Suncrisp	ct	548	434	135	1.072	94	43	16	6	6	52	35	8	0	
Atlantic	ne	485	431	134	1.074	93	39	5	7	7	54	32	8	0	
B0176-24	cf	487	417	130	1.073	90	46	5	10	10	44	33	13	0	
NY 101	ny	505	407	127	1.061	89	38	9	11	11	51	31	6	0	
St. Johns	ct	486	406	126	1.059	93	35	10	7	7	58	32	3	0	
B0257-12	cf	482	401	125	1.068	94	37	12	6	6	57	35	3	0	
NY 103	ny	474	395	123	1.056	91	37	8	9	9	54	33	4	0	
Snowden	ct	454	393	122	1.072	90	21	4	10	10	68	20	2	0	
B0564-9	cf	456	392	122	1.059	94	50	9	6	6	44	40	10	0	
B0172-22	ne	530	389	121	1.069	79	33	12	21	21	46	30	3	0	
AF 875-15	ne	437	385	120	1.069	92	19	5	8	8	73	17	2	0	
Somerset	ct	430	359	112	1.068	87	14	4	13	13	73	14	0	0	
Norwis	ct	382	349	109	1.052	97	35	5	3	3	62	30	6	0	
NY 87	ne	409	341	106	1.066	91	22	12	9	9	70	19	3	0	

NJ Variety Table 5. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
AC Novachip	ct	503	336	105	1.065	91	19	19	27	9	72	19	0	0
B0178-30	cf	444	327	102	1.073	83	23	23	12	17	60	20	3	0
B0178-34	cf	439	321	100	1.080	92	38	38	25	8	54	29	9	0
Superior	ne	385	320	100	1.060	89	17	17	7	11	73	16	1	0
NY E55-35	ne	387	319	99	1.075	85	20	20	4	15	64	18	3	0
NY E55-44	ne	364	306	95	1.065	86	8	8	2	14	78	7	1	0
B0585-5	cf	353	299	93	1.064	96	52	52	14	4	44	37	15	0
NY 102	ny	331	285	89	1.062	88	19	19	2	12	69	18	1	0
Allegany	ct	290	258	80	1.059	95	52	52	6	5	43	40	13	0
NY 95	ny	292	212	66	1.074	82	10	10	11	18	72	9	1	0
Grand Mean		462	379		1.064	90	31	31	9	10	59	26	5	0
C.V.(4)		14	20		4.	7	29	29						
W-D LSD .05		89	113		.003	ns	12	12	13	ns	10	10	6	ns

- (1) All plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/21 and harvested on 8/8.
- (2) ct = Certified Seed, cf = USDA Chapman Farm, ne = NE Reg. Project, ny = NY Breeding Program.
- (3) Size1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
- (4) C.V. = Coefficient of Variation; W-D Bayes LSD .05 = Waller Duncan Test For Least Significant Difference. ns = non significant.

NJ Variety Table 6. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1994 (1).

Variety	PLANT				TUBER CHARACTERS						TUBER DEFECTS						OVER ALL CC Comments		
	A		M		S	S	C	T	S	D	A	S	TUBER			DEFECTS			
	P	P	t	t									G	C	S	H		H	N	R
AF1060-2	7	6	8	5	8	7	2	7	7	6	9	9	9	0	2	8	no	small big yield	
NY Ell-45	8	4	5	7	8	8	3	5	7	7	7	8	9	2	1	6	yes	good yield	
Portage	8	6	6	5	8	8	2	7	6	4	7	6	1	12	6	no	second growth		
Chipeta	8	8	8	7	8	8	4	7	5	5	9	9	5	46	6	no	heat necrosis		
Langlade	8	5	7	8	7	7	2	6	7	7	7	8	0	23	5	no	heat necrosis		
NY 84	8	6	8	8	8	7	2	8	8	9	7	9	0	3	6	yes	fresh market		
Suncrisp	9	8	8	4	8	7	6	7	4	5	7	9	15	0		ok	late chip-only		
Atlantic	8	4	5	8	8	7	2	8	7	7	8	9	2	35	3	std	bad heat nec.		
B0176-24	8	6	8	5	8	8	2	9	7	6	9	9	2	1	7	yes	late second growth		
NY 101	8	5	6	9	7	6	2	6	7	6	8	9	1	14	6	no	heat nec.		
St. Johns	8	4	5	5	8	8	3	7	5	7	6	9	0	0		ok	shape gr. cracks		
B0257-12	7	6	5	7	8	8	3	6	7	9	9	9	1	15	7	yes	scab, good yield		
NY 103	7	4	5	8	8	6	4	7	6	7	9	9	0	3	6	yes	oblong		
Snowden	7	6	7	9	7	6	2	7	8	9	8	9	1	10	7	yes	slight heat nec.		
B0564-9	7	4	4	9	7	7	2	8	8	8	9	9	0	0		yes	nice tubers		
B0172-22	8	5	7	5	8	8	5	6	4	3	7	9	12	0		no	small low yield		
AF 875-15	7	4	4	9	8	7	2	5	7	8	7	9	0	1	7	yes	early		
Somerset	7	6	6	5	8	8	5	6	7	8	9	9	1	0		ok	no seed avail.		
Norwis	7	4	3	4	8	8	2	6	7	9	7	9	0	1	7	yes	ok		
NY 87	8	5	6	8	8	7	2	8	8	9	9	9	0	0		yes	stems on tubers		

NJ Variety Table 6. (continued).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS							OVER ALL CC	Comments
	A P	A P	M t	S S	C l	T x	S h	D p	A p	S G	H C	H S	H H	H N	R				
AC Novachip	8	6	8	9	8	8	4	6	6	3	9	9	2	0		no	second growth		
B0178-30	8	5	7	7	8	8	3	6	7	4	8	5	4	7	6	no	second growth		
B0178-34	8	5	7	8	8	7	2	6	6	7	9	9	2	9	6	yes	chipper, heat nec.		
Superior	7	4	3	9	7	6	3	7	6	7	7	9	0	1	7	std	misshapen		
NY E55-35	7	5	6	8	7	6	2	8	8	9	9	9	0	10	6	no	small, heat nec.		
NY E55-44	6	3	3	9	7	6	2	8	8	7	9	9	0	6	2	no	low yield		
B0585-5	6	5	6	9	8	7	2	7	8	7	7	9	3	0		no	low yield		
NY 102	6	3	4	9	8	7	2	6	6	9	8	9	0	0		no	low yield		
Allegany	8	4	6	7	8	7	2	8	7	8	8	9	2	0		no	air cracks		
NY 95	8	3	6	6	7	7	4	7	5	7	9	9	0	9	6	no	low yield + h nec.		

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

NJ Variety Table 7. Yields, Specific Gravities, and Tuber Sizes for 6 Russet Potato Selections Grown on a Sandy Loam Soil on Harvest Main Season at the Rutgers Research & Dev. Center - Upper Deerfield, New Jersey - 1994 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield % of Nork.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					
					4 oz	8 oz	r oz		1	2	3	4	5	
Four Replications														
Superior	ne	399	366	129	1.062	92	27	1	8	65	24	3	0	
B0493-8	ne	401	309	109	1.065	80	19	4	20	60	15	3	1	
R Norkotah	ne	377	282	100	1.062	77	23	2	23	53	19	3	1	
B9922-11	ne	327	235	83	1.074	74	12	2	26	62	11	1	0	
Grand Mean		376	298		1.066	81	20	2	19	60	17	3	1	
C.V. (4)		9	13		2.	8	30							
W-D LSD .05		ns	60		.002	10	11	1	10	ns	9	ns	ns	
Observational One Replication														
AF1644-1	me	470	322	114	1.051	77	38	11	23	39	30	6	2	
AF1643-10	me	356	283	100	1.069	81	13	2	19	68	13	0	0	
R Norkotah	ne	315	180	63	1.065	59	14	3	41	45	14	0	0	
AF1639-5	ne	210	96	34	1.050	52	3	12	48	48	3	0	0	

(1) All plots were 21' long and 3' wide. Seedpieces were spaced at 12". Commercial cultural practices were used which included irrigation. All plots were planted on 4/21 and harvested on 8/8.

(2) ne = Northeast Regional Project, me = University of Maine.

(3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

(4) CV = Coefficient of Variation; W-D Bayes LSD .05 = Waller Duncan Test For Least Significant Difference, ns = non significant.

NJ Variety Table 8. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1994 (1).

Variety	PLANT				TUBER CHARACTERS					TUBER DEFECTS					OVER	
	A	A	M	S	C	T	S	D	A	S	G	H	H	H	N	R
	p	p	t	s	l	x	h	p	p	G	C	S	H	N	R	ALL
Four Replications																
Superior	8	4	3	9	7	6	6	6	7	7	9	6	0	6	6	std
B0493-8	7	4	5	6	5	4	8	6	7	8	9	9	2	2	6	ok
Rus. Norkotah	7	5	5	7	5	3	8	6	6	7	9	9	0	2	8	std
B9922-11	8	5	7	7	5	4	8	6	6	8	9	9	0	2	8	ok
pointy tubers																
nice tubers																
nice tubers																
Observational One Replication																
AF1644-1	8	4	4	7	5	3	8	6	5	6	9	9	0	4	7	no
AF1643-10	7	4	4	3	6	7	8	6	6	7	8	9	0	0		no
Rus. Norkotah	8	4	5	7	5	3	8	5	5	8	8	9	0	1	7	std
AF1639-5	2	4	6	8	7	7	9	7	4	7	9	9	0	0		no
poor appearance																
poor appearance																
nice tuber type																
poor appearance																

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

NJ Variety Table 9. Yields, Specific Gravities, and Tuber Sizes for 12 **Specialty** Potato Varieties Grown on a Sandy Loam Soil at the Rutgers Research & Development Center - Upper Deerfield, NJ 1994 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
Fontenot	ct	498	418	112	1.064	94	58	10	6	36	43	15	0	0
Chieftain	ct	455	386	104	1.055	92	32	8	8	60	28	4	0	0
B0984-1	cf	376	338	91	1.069	96	51	6	4	45	46	5	0	0
B0903-2	cf	534	330	88	1.066	81	20	24	19	61	19	1	0	0
B0967-11	cf	409	326	87	1.070	91	42	13	9	49	31	11	0	0
B0852-7	cf	346	315	84	1.063	91	18	0	9	73	18	0	0	0
DR Norland	ne	411	290	78	1.047	74	4	5	26	70	4	0	0	0
ND2224-5R	ne	393	283	76	1.053	76	6	5	24	70	4	2	0	0
B0800-12	cf	340	270	72	1.061	80	4	0	20	76	4	0	0	0
B0811-13	cf	353	256	69	1.069	80	14	10	20	66	14	0	0	0
Cherry Red	ct	279	238	64	1.068	86	11	1	14	75	11	0	0	0
B1145-3	cf	177	133	35	1.049	77	7	2	23	70	7	0	0	0

(1) All plots were 21' long and 3' wide with 1 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/21 and harvested on 8/8.

(2) ct = Certified Seed, cf = USDA Chapman Seed Farm, ne = Northeast Regional Project

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

NJ Variety Table 10. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1994 (1).

Variety	PLANT				TUBER CHARACTERS								TUBER DEFECTS								OVER ALL	Comments			
	A		P		M	S	S	C	T	CHARACTERS				DEFECTS											
	A	P	A	P						S	D	A	S	G	H	H	N	R							
Fontenot	9	6	8	3	3	2	8	3	7	7	7	7	8	9	0	0	0	0	0	0	0	0	0	ok	too big good color
Chieftain	8	3	3	3	3	2	8	2	6	7	7	7	7	9	8	0	2	7	0	0	0	0	0	std	pale red
B0984- 1	8	3	6	6	6	2	7	2	8	7	7	7	8	9	9	0	0	0	0	0	0	0	0	ok	bruises
B0903- 2	9	5	8	5	5	1	7	4	7	5	5	3	3	9	8	0	0	0	0	0	0	0	0	no	rough purple
B0967-11	8	4	6	3	3	1	7	2	8	7	7	6	6	9	9	0	4	6	0	0	0	0	0	no	scab purple
B0852- 7	8	3	6	5	5	1	7	3	7	7	7	7	7	9	9	0	0	0	0	0	0	0	0	ok	so-so purple
DR Norland	5	5	6	6	6	2	7	3	6	7	7	5	9	7	0	0	0	0	0	0	0	0	0	no	poor color
NND2224-5R	6	5	6	7	7	2	7	4	6	7	7	6	8	9	0	0	0	0	0	0	0	0	0	yes	nice red and small
B0800-12	4	2	2	5	5	2	6	2	8	7	7	7	8	9	0	0	0	0	0	0	0	0	0	no	second growth
B0811-13	6	3	3	7	7	2	4	2	7	7	7	7	9	9	0	2	7	0	0	0	0	0	0	yes	very nice yel fles
Cherry Red	8		2	7	7	2	7	3	6	7	7	6	9	9	0	0	0	0	0	0	0	0	0	no	second growth
B1145- 3	2		1	6	6	2	6	3	6	6	6	8	9	9	0	0	0	0	0	0	0	0	0	no	low yield

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

NJ Variety Table 11. Yields, Specific Gravities, and Tuber Sizes for 62 Potato Seedlings
Grown on a Sandy Loam Soil at the Rutgers Research &
Development Center - Upper Deerfield, NJ 1994 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
AF1559- 5	me	277	204	54	1.067	78	21	21	5	22	57	14	7	0
AF1566-10	me	460	418	112	1.057	91	32	32	0	9	59	23	10	0
AF1613- 3	me	447	366	98	1.045	89	30	30	8	11	59	29	2	0
AF1656- 4	me	401	363	97	1.064	94	30	30	3	6	63	30	0	0
AF1657- 3	me	463	308	83	1.063	83	22	22	20	17	62	17	5	0
AF1658- 5	me	398	363	97	1.064	95	64	64	4	5	32	52	12	0
AF1668-13	me	398	349	94	1.065	96	74	74	9	4	22	50	25	0
AF1668-58	me	482	363	97	1.049	95	48	48	20	5	47	41	7	0
AF1668-60	me	482	436	117	1.057	92	33	33	1	8	58	33	0	0
AF1668-62	me	425	142	38	1.063	64	11	11	48	36	53	11	0	0
AF1675- 1	me	498	411	110	1.070	86	16	16	3	14	70	13	3	0
B0405- 5	cf	467	411	110	1.068	92	33	33	4	8	59	29	5	0
B0766- 3	cf	537	519	139	1.060	97	56	56	1	3	42	38	18	0
B0850- 8	cf	404	342	92	1.056	85	9	9	0	15	75	9	0	0
B0887- 5	cf	425	398	107	1.063	96	63	63	2	4	33	40	23	0
B0892- 7	cf	463	408	109	1.077	88	22	22	0	12	66	18	4	0
B0933-14	cf	478	404	108	1.073	88	26	26	4	12	62	21	5	0
B0977- 7	cf	619	484	130	1.055	89	28	28	12	11	61	26	2	0
B0996- 1	cf	302	225	60	1.058	76	4	4	2	24	73	4	0	0
B0996- 5	cf	490	370	99	1.060	91	56	56	17	9	35	34	22	0
B1022- 8	cf	432	415	111	1.059	97	77	77	1	3	19	39	39	0
B1032- 3	cf	449	432	116	1.070	98	74	74	2	2	23	48	27	0
B1110- 5	cf	339	229	61	1.060	75	9	9	10	25	66	5	5	0
B1110-11	cf	463	422	113	1.069	91	40	40	0	9	51	28	12	0
B1111- 9	cf	550	411	110	1.070	91	37	37	18	9	54	24	12	0

NJ Variety Table 11. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% Over		% Culls	% Tuber Sizes (3)				
					1	2 1/2		1	2	3	4	5
B1128-11	cf	239	180	1.060	75	6	0	25	70	6	0	0
B1132-11	cf	378	245	---	82	6	21	18	77	6	0	0
B1137-6	cf	346	304	1.061	91	37	3	9	54	29	8	0
B1157-5	cf	395	308	1.057	81	6	4	19	74	6	0	0
B1169-4	cf	373	332	1.051	90	32	1	10	58	32	0	0
B1189-7	cf	434	346	1.055	89	22	10	11	67	22	0	0
B1191-2	cf	420	377	1.052	91	19	1	9	72	17	3	0
B1150-5	cf	577	432	1.065	78	8	4	22	70	8	0	0
B1207-5	cf	308	228	1.064	81	2	9	19	79	2	0	0
B1207-11	cf	308	263	1.076	85	15	0	15	71	15	0	0
B1208-24	cf	519	398	1.070	78	10	1	22	68	10	0	0
B1208-26	cf	467	436	1.062	93	40	0	7	53	31	9	0
B1210-11	cf	536	422	1.059	90	18	12	10	71	18	0	0
B1213-7	cf	404	187	1.056	79	9	42	21	71	9	0	0
B1216-12	cf	393	339	1.056	90	29	5	10	61	29	0	0
B1225-1	cf	671	394	1.055	92	23	36	8	69	20	2	0
B1228-1	cf	289	270	1.064	93	31	0	7	62	31	0	0
B1236-3	cf	541	391	1.070	83	23	13	17	60	20	3	0
B1240-3	cf	418	373	1.071	90	23	1	10	68	19	3	0
B1247-1	cf	328	287	1.071	89	3	2	11	86	3	0	0
B1248-5	cf	460	394	1.071	89	41	4	11	48	35	6	0
B1250-3	cf	438	415	1.075	95	63	1	5	32	46	17	0
B1252-4	cf	344	287	1.060	88	29	5	12	59	25	3	0
B1255-15	cf	491	245	1.070	50	22	1	50	28	20	2	0
B1259-10	cf	355	311	1.066	88	29	0	12	58	20	9	0

NJ Variety Table 11. (Continued.)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	Sup.		1	7/8	2 1/2		1	2	3	4	5
B1265- 4	cf	297	245	66	1.055	83		6	0	17	77	6	0	0
B1265-11	cf	358	283	76	1.070	89		36	11	11	53	22	14	0
B1283- 2	cf	575	422	113	1.068	91		10	19	9	81	10	0	0
B1284- 5	cf	328	304	81	1.074	93		58	0	7	35	42	16	0
B1285-32	cf	550	297	80	1.067	78		12	31	22	66	12	0	0
B1287- 2	cf	431	325	87	1.063	85		29	12	15	56	27	2	0
B1298-31	cf	429	349	94	1.063	89		23	8	11	66	23	0	0
B1303- 8	cf	344	318	85	1.063	97		33	5	3	64	32	1	0
B1304- 2	cf	425	360	97	1.062	87		12	3	13	76	10	2	0
B1306-37	cf	370	277	74	1.059	78		11	4	22	67	11	0	0
B1240- 6	cf	380	332	89	1.083	87		21	0	13	66	21	0	0
AF1570- 1	me	418	370	99	1.067	89		30	1	11	59	27	3	0

(1) All plots were 21' long and 3' wide with 4 reps. Seedpieces were spaced at 9". Commercial cultural practices were used which included irrigation. All plots were planted on 4/21 and harvested on 8/8.

(2) cf = USDA Chapman Seed Farm and me = University of Maine Breeding Program.

(3) Size1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

NJ Variety Table 12. Plant and Tuber Characters, Tuber Defects, Chip Color and Overall Rating for Varieties and Seedlings Grown in Upper Deerfield, NJ 1994 (1).

Variety	PLANT				TUBER CHARACTERS							TUBER DEFECTS							OVER	Comments
	A		P		S	C	T	S	D	A	S	G	H	H	N	R				
	p	P	t	M	S	l	x	h	p	p	G	C	S	S	N					
AF1559- 5	6	6	5	7	7	7	7	2	7	7	7	9	9	0	5	6	no	heat nec. small		
AF1566-10	6	4	6	4	8	8	8	2	8	7	8	9	9	0	0		yes	fresh market		
AF1613- 3	6	8	8	4	8	9	9	3	7	6		6	9	0	0		no	poor		
AF1656- 4	6	6	7	3	8	7	7	2	7	7	8	9	9	7	3	7	ok	good chip color		
AF1657- 3	7	5	5	3	8	7	7	7	7	3	5	7	7	0	6	5	no	heat nec.		
AF1658- 5	8	4	5	5	8	7	7	3	7	7	7	9	9	0	0		ok	so-so		
AF1668-13	7	6	8	7	8	7	7	3	7	6	7	7	9	0	0		no	variable shape		
AF1668-58	5	6	5	4	8	8	8	4	7	3	8	4	9	0	0		no	big but ugly		
AF1668-60	5	7	7	4	8	8	8	4	6	6	7	9	9	0	0		yea	good yield		
AF1668-62	6	7	6	5	7	7	7	8	6	2	6	8	9	0	0		no	poor yield		
AF1675- 1	8	7	5	4	7	6	7	4	6	6	7	9	9	1	5	6	no	heat nec.		
B0405- 5	7	6	8	6	8	7	7	3	7	8	5	9	6	2	10	4	no	bad heat nec.		
B0766- 3	7	2	3	7	7	6	6	2	8	8	9	9	9	0	3	8	yes	good yield chip		
B0850- 8	5	7	4	8	7	6	6	5	6	6	9	9	9	0	1	5	no	small, low yield		
B0887- 5	7	3	4	7	7	8	2	2	9	8	8	8	9	0	0		yes	nice, good yield		
B0892- 7	7	6	7	4	8	7	7	2	7	8	9	9	9	1	0		yes	no culls, app++		
B0933-14	7	5	5	5	7	6	2	2	5	7	7	9	9	0	0		no	small		
B0977- 7	7	2	3	5	8	7	7	2	5	5	6	9	9	0	4	7	ok	good yield, app-		
B0996- 1	4	5	8	5	8	7	7	5	5	4	7	9	9	0	0		no	poor yield		
B0996- 5	7	5	7	3	8	8	8	3	5	6	3	9	9	0	6	7	no	heat nec.		
B1022- 8	7	5	7	6	8	8	8	3	8	7	8	9	9	0	10	1	no	bad heat nec.		
B1032- 3	6	6	7	7	8	7	7	2	7	8	8	9	9	0	0		yes	good yield, app+		
B1110- 5	6	4	6	5	8	8	8	2	8	8	7	9	9	0	2	7	no	poor yield		
B1110-11	7	4	3	5	7	6	6	2	8	8	9	9	9	0	4	6	no	heat nec.		
B1111- 9	7	6	5	4	8	8	8	5	7	3	3	6	9	1	8	6	no	heat nec.		

NJ Variety Table 12. (continued).

Variety	PLANT			TUBER				CHARACTERS				TUBER				DEFECTS				OVER ALL CC	Comments
	A	A	P	M	S	S	C	T	S	D	A	S	G	C	S	H	H	N	R		
B1128-11	3	1	3	2	9	7	6	2	8	7	8	9	8	9	8	0	0	0	0	no	poor yield
B1132-11	6	3	6	6	2	8	8	8	5	4	5	9	9	9	9	0	5	5	no	heat nec.	
B1137-6	5	4	5	5	7	7	6	2	8	7	7	8	9	9	9	0	3	7	no	poor yield	
B1157-5	6	4	6	5	4	8	8	7	5	6	6	8	9	9	9	0	0	0	ok	long white	
B1169-4	6	4	6	4	6	8	8	2	6	8	6	9	9	9	9	0	0	0	no	77 low yield	
B1189-7	5	6	5	6	5	8	8	5	4	3	7	7	9	9	9	0	0	0	no	poor appearance	
B1191-2	5	2	3	3	8	8	8	1	8	8	0	8	9	9	9	0	1	8	no	many bees	
B1150-5	8	7	9	9	5	7	6	3	5	6	6	5	9	6	6	0	0	0	no	many bees	
B1207-5	3	6	7	7	5	7	6	4	6	6	6	6	9	9	9	0	8	5	no	bad heat nec.	
B1207-11	6	3	4	4	7	6	6	2	7	7	7	7	8	9	9	0	7	6	no	heat nec.	
B1208-24	6	7	8	8	5	7	6	3	6	6	6	7	9	9	9	0	6	6	no	heat nec.	
B1208-26	7	4	6	6	6	6	6	2	8	8	8	9	9	9	9	0	7	6	no	heat nec.	
B1210-11	8	7	7	7	3	8	7	3	6	5	5	6	9	9	9	1	9	7	no	heat nec.	
B1213-7	7	5	4	4	6	8	7	7	7	5	5	4	7	8	9	0	1	6	no	second growth	
B1216-12	8	6	7	7	3	7	7	2	8	6	6	6	9	9	9	0	6	5	no	heat nec.	
B1225-1	8	7	9	9	4	8	7	7	7	2	7	5	9	9	6	0	3	7	no	bad appearance	
B1228-1	6	5	6	6	6	6	6	2	5	6	6	8	9	9	9	0	6	6	no	heat nec.	
B1236-3	8	5	6	6	9	6	6	2	6	6	6	5	7	9	9	0	2	7	no	so-so small	
B1240-3	8	6	8	8	6	7	7	2	8	7	7	7	9	9	9	5	6	5	no	heat nec. small	
B1247-1	6	2	4	4	7	8	7	2	8	8	8	8	9	9	9	0	4	7	no	poor yield	
B1248-5	7	4	6	6	4	8	7	2	8	8	8	7	8	9	9	1	0	0	yes	57 nice	
B1250-3	6	4	5	5	7	7	6	2	8	8	8	9	9	9	9	0	3	6	try	35 heat nec. nice	
B1252-4	5	3	4	4	5	8	7	2	8	7	7	6	9	9	9	5	0	0	no	hollow heart	
B1255-15	6	5	6	6	7	8	7	2	6	8	8	7	9	9	9	0	10	1	no	bad heat nec.	
B1259-10	6	5	6	6	7	7	6	5	5	6	6	9	9	9	9	0	9	4	no	bad heat nec.	

NJ Variety Table 12. (continued).

Variety	PLANT			TUBER CHARACTERS										TUBER DEFECTS								OVER		Comments
	A	A	P	M	S	S	C	T	x	h	p	D	A	S	G	C	S	H	H	N	R	ALL	CC	
B1265- 4	6	3	3	2	4	4	8	7	7	8	6	6	5	8	9	9	9	0	0	2	7	no		low yield, small
B1265-11	9	8	8	9	5	9	7	7	7	3	7	6	6	6	9	9	9	0	0	2	8	no		low yield, small
B1283- 2	8	6	6	6	5	5	6	6	6	7	7	5	5	4	7	9	9	0	0	0		no		ugly
B1284- 5	6	2	3	3	7	7	7	7	7	1	9	8	8	9	9	9	9	0	0	1	7	yes	46	early, nice tuber
B1285-32	8	7	7	7	5	8	8	7	7	8	7	2	2	1	5	5	5	0	0	8	5	no		heat nec.
B1287- 2	6	7	7	8	3	3	8	7	7	6	4	4	4	4	8	9	9	0	0	0		no		poor appearance
B1298-31	7	6	8	8	3	3	8	8	8	2	8	6	6	7	5	9	9	0	0	1	7	no		defects
B1308- 8	4	6	6	6	5	5	8	8	8	5	6	7	7	7	7	9	9	0	0	3	8	no	56	growth cracks
B1304- 2	5	6	6	5	5	5	8	7	7	4	7	7	7	8	7	9	9	0	0	0		ok	99	growth cracks
B1306-37	6	3	3	3	8	7	7	6	6	3	7	7	7	7	7	9	9	0	0	0		no		small
B1240- 6	6	4	7	9	9	7	7	6	6	2	6	7	7	9	9	9	9	0	0	6	6	no		heat nec.
AF1570- 1	7	6	8	6	6	8	8	7	7	4	5	6	6	8	9	9	9	0	0	0		no	89	poor appearance

(1) See NJ Rating Table for plant and tuber characters, tubers defects and chip color ratings.

NJ Rating Table. Rating Codes For Plant and Tuber Characters, Tuber Defects, and Chip Color Ratings.

AP = Air Pollution Cl = Color SG = Second Growth HH = Hollow Heart no./10 cut
 Ap = Appearance Tx = Texture GC = Growth Crack HN = Heat Necrosis no./10 cut
 Mt = Vine Maturity Sh = Shape HS = Heat Sprouts R = Heat Nec.
 SS = Tuber Skin Set Dp = Depth

A rating of 7 is acceptable.

Plant & Tuber		Foliar Disease		Vine		Tuber		Tuber	
Appearance (Ap)	Rating (AP)	Rating (AP)	Rating (AP)	Maturity (Mt)	Skin Set (SS)	Color (Cl)	Texture (Tx)	Color (Cl)	Texture (Tx)
1. very poor	1. dead	1. dead	1. very early	1. very poor	1. purple	1. part russet			
2. poor	2. very severe	2. very severe	2. early	2. poor	2. red	2. hev. russet			
3. fair	3. severe	3. severe	3. medium	3. fair	3. pink	3. mod. russet			
4. good	4. moderate	4. moderate	4. late	4. good	4. dark brown	4. lgt. russet			
5. excellent	5. slight	5. slight	5. very late	5. excellent	5. brown	5. net			
	6. very slight	6. very slight			6. tan	6. slight net			
	7. none	7. none			7. buff	7. mod. smooth			
					8. white	8. smooth			
					9. bright white	9. very smooth			

Tuber		Tuber Disease Rating		Wise Foods	
Shape (Sh)	Depth (Dp)	(SG, GC, HS, HN)	Chip Color	Shape (Sh)	Depth (Dp)
1. very round	1. very flat	1. very severe	1. paper white	1. very round	1. very flat
2. mostly round	2. flat	2. severe	2. acceptable	2. mostly round	2. flat
3. round to oblong	3. ok	3. moderate	3. borderline	3. round to oblong	3. ok
4. mostly oblong	4. good	4. slight	4. unacceptable	4. mostly oblong	4. good
5. oblong	5. very slight	5. none	5. black chip	5. oblong	5. very slight
6. mostly oblong	6. very round			6. mostly oblong	6. very round
7. oblong to long				7. oblong to long	
8. mostly long				8. mostly long	
9. very long				9. very long	

New York - Upstate

D.E. Halseth, W.L. Hymes
R.W. Porter, R.L. MacLaury

Program Scope:

Potato variety yield trials were conducted in five counties in upstate New York in 1994 in which a total of 24 named and 66 numbered clones were evaluated. Eight replicated trials were conducted at the Thompson Vegetable Research Farm at Freeville in Tompkins County on a Howard gravelly loam soil. Grower trials were conducted on mineral soils near Arkport (Steuben County), Cato (Cayuga County) and Hermitage (Wyoming County) and on muck soil near Fulton (Oswego County). Trials at Freeville were irrigated twice during July and the Cato and Gainesville trials were irrigated by the growers. All trials were grown using standard commercial cultural practices. As evaluation of potato lines with golden nematode (GN) resistance is of high priority, 25% of the named and 79% of the numbered entries in these trials have GN resistance. Marketable yield, tuber quality and appearance, maturity, storage life and processing potential are among the important characteristics which are evaluated.

Research Farm Results:

The early maturity yield trial had two clones, CF7523-1 and NYE55-44, which outyielded Superior. F80054 had extremely high specific gravity but very low yields. NYE55-44 had the best overall combination of yield, gravity and appearance. In the medium maturity trial CF7523-1, NY103 and NY105 had yields similar to Atlantic. MaineChip again had specific gravity well above Atlantic, but also had a high percentage of hollow heart, as did B0245-15 and Katahdin. In the medium-late trial, NY101 was the top yielder at 415 cwt/a and NY95 the highest gravity at 1.091. The late trial had B0178-34, Elba and NYE11-45 as very high yielders. B0178-34 had the highest gravity at 7 units above Atlantic while B0564-8 had the fewest overall defects. The advanced Cornell trial had numerous high yielders, with M1-2, M19-3 and M28-3 at the top. M19-3 also had the best tuber appearance and very low defect levels. The red/purple trial found that only N40-1 and Red Pontiac had higher marketable yields than

Chieftain. Desiree had the highest gravity, N38-4 had the best appearance. In the russet trial B0493-8, B0927-9SG and Russet Bake-King had good marketable yields. Russet Burbank had the highest percentage of defects and BelRus had the least. In the advanced USDA trial B0874-1 was the top yielder while B0892-7 had the highest gravity.

Grower County Trial Results:

Purple, red, russet and white tablestock selections were grown in the Cayuga and Oswego County trials. The round white clones AF1060-2, NY87, NY101, NY103, NY105 and St. Johns yielded well at both sites. Redsen had the best red color, all other selections were lighter in color similar to Norland. The russet B9922-11 had good yield and tuber confirmation. In the chip processing variety trials in Steuben and Wyoming Counties, NY87, NY98, NY102 and NY103 outyielded Atlantic at both sites. B0178-34 and NY95 had specific gravity greater than Atlantic in both county trials.

Table Heading Explanations:

Marketable yield in cwt/a was calculated from total yield less both external defects and undersize tubers (smaller than 1 7/8 inches)

Percent marketable yield represents the percentage that each entry's marketable yield is of that of a specified standard variety.

Size distribution percentage is the weight of a specific size category divided by total yield (including defects).

Specific gravity was taken by potato hydrometer.

Vine maturity ratings were on a nine point scale:

- 1 = all plants completely dead
(very early maturity)
- 9 = all plants full green
(very late maturity)

Tuber shape was classified using the code:

- 1 = round
- 2 = mostly round
- 3 = round to oblong
- 4 = mostly oblong

- 5 = oblong
- 6 = oblong to long
- 7 = mostly long
- 8 = long
- 9 = cylindrical

Tuber appearance was subjectively evaluated using the scale:

- 1 = extremely rough or otherwise unattractive
- 9 = very uniform and attractive

External defects were rated on all material graded. Internal defects were made on a subset of tubers, usually 10 per replication, taken from size categories 3 and 4.

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Cooperative Extension Agents Carl Albers, Steve Childs and Dale Young coordinated grower trial work in their counties. Special thanks is given to grower-cooperators: Murray Mahany and FAMILY, Jim McCormick and Jim Zappala. Seed of new clones was provided by: Robert Plaisted, Cornell University; Alvin Reeves, University of Maine; Kathleen Haynes, USDA; and Gregory Porter, NE107 Project. Donation of seed by Kent Farms, Inc. and assistance from Jeffery Von Matt of the NY Potato Growers Cooperative, Inc. in locating seed are greatly appreciated. The Freeville crew is acknowledged for their excellent cooperation in maintaining the research farm plots.

Upstate New York Table 1. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the early maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.	
				1	2	3	4	5	1 7/8-4"	2 1/2-4"			
Atlantic AF1606-2	269 236	226 182	105 85	6 8	31 38	43 44	16 4	4 6	90 86	59 48	4.5 3.8	6.2 6.5	86 76
CF7523-1 F80054	323 192	256 77	119 36	10 57	43 41	43 2	3 0	1 0	89 43	46 2	6.8 8.6	4.9 2.3	76 99
Monona NY106	224 240	191 199	89 92	10 13	44 58	44 28	2 1	0 0	90 87	46 29	4.5 5.5	5.1 4.5	70 77
NYE55-44 Superior (std)	265 248	234 215	109 100	8 9	46 49	40 39	5 2	1 1	91 90	45 41	5.4 5.4	5.1 4.8	81 76
Waller-Duncan LSD (k=100)	21	27									0.7	0.5	2
C.V. (%)	(6)	(9)									(8)	(7)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 5

Vine-kill date (mowed): August 23

Harvest date: August 24

Upstate New York Table 2. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the early maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic AF1606-2	6.2	2.0	6.0	5.5	1.4	2.7	1.4	0.0	3.3	0.0	0.0
	1.5	6.0	4.7	8.3	0.2	5.7	0.9	1.5	3.3	0.0	0.0
CF7523-1 F80054	6.6	2.8	6.5	9.6	1.7	4.6	3.3	0.0	0.0	0.0	0.0
	2.3	4.0	5.0	3.2	0.3	2.9	0.0	0.0	0.0	0.0	0.0
Monona NY106	5.1	4.0	3.5	5.3	1.3	3.8	0.2	0.0	0.0	0.0	0.0
	1.5	2.7	4.0	4.2	0.1	2.6	0.9	0.6	0.0	0.0	0.0
NYE55-44 Superior (std)	2.6	2.0	7.0	3.5	0.6	0.3	2.0	0.6	0.0	0.0	0.0
	1.4	3.0	5.8	3.8	0.7	2.5	0.5	0.1	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 3. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Yield % of std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.
				1	2	3	4	5	1 7/8-4"	2 1/2-4"		
Atlantic (std)	319	270	100	5	44	40	10	1	94	50	6.5	5.1
AF1425-1	260	210	78	11	59	29	1	0	89	30	6.7	4.0
AF1475-16	247	215	80	3	36	47	10	3	93	57	4.5	5.7
AF1609-1	269	220	81	2	33	45	19	1	97	64	4.4	6.4
AF1614-2	260	202	75	3	34	40	16	6	90	56	4.4	6.1
B0245-15	242	196	73	6	46	42	5	1	93	47	5.0	5.0
CF7523-1	341	283	105	5	44	41	7	3	92	48	6.6	5.4
Kanona	236	199	74	7	47	38	7	1	92	45	5.0	4.9
Katahdin	241	179	66	6	43	41	8	2	92	49	4.7	5.3
Kennebec	265	214	79	6	48	40	5	1	93	45	5.7	4.9
MaineChip	260	207	77	6	65	27	2	0	94	29	6.1	4.5
Monona	259	214	79	7	54	34	4	1	92	38	5.9	4.6
Norchip	277	213	79	8	61	29	2	0	92	31	6.9	4.2
NY102	254	217	80	10	71	19	0	0	90	19	6.9	3.8
NY103	293	262	97	6	61	33	0	0	94	33	6.8	4.5
NY105	280	239	89	6	54	34	3	3	91	37	5.9	4.9
NY106	190	160	59	9	58	32	1	0	91	33	4.7	4.2
NYE55-44	242	202	75	7	48	38	6	1	92	44	5.1	5.0
Wallier-Duncan												
LSD (k=100)	31	35									0.8	0.5
C.V. (%)	(9)	(12)									(11)	(8)
											(2)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 10

Vine-kill date: August 30

Harvest date: September 9

Upstate New York Table 4. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic (std)	1.5	1.0	4.3	9.2	1.3	1.5	5.5	0.9	5.0	0.0	0.0
AF1425-1	1.0	3.0	7.8	7.4	4.4	1.4	1.8	0.0	2.5	0.0	2.5
AF1475-16	1.1	3.0	6.0	6.4	2.9	1.1	2.3	0.1	0.0	17.5	0.0
AF1609-1	4.4	4.0	3.4	15.3	2.0	3.4	9.8	0.1	0.0	5.0	0.0
AF1614-2	1.4	3.0	3.3	12.6	2.9	5.9	3.4	0.4	0.0	0.0	0.0
B0245-15	1.8	3.0	3.3	11.9	3.5	4.2	4.1	0.1	15.0	0.0	0.0
CF7523-1	4.3	3.0	8.0	9.6	2.2	1.2	6.2	0.0	0.0	30.0	0.0
Kanona	1.4	1.0	5.0	7.9	3.3	2.5	2.1	0.0	2.5	37.5	0.0
Katahdin	5.0	2.0	5.3	17.5	12.4	1.6	2.9	0.6	35.0	12.5	0.0
Kennebec	1.5	5.0	3.3	13.2	5.8	4.1	3.0	0.3	0.0	15.0	5.0
MaineChip	1.9	2.0	4.0	14.7	3.3	1.4	10.0	0.0	12.5	7.5	0.0
Monona	1.1	1.0	3.3	9.5	1.0	3.7	4.2	0.6	0.0	12.5	0.0
Norchip	1.4	1.0	4.0	14.6	1.6	6.4	6.4	0.2	0.0	17.5	0.0
NV102	1.6	1.0	5.5	4.1	0.4	0.3	3.3	0.1	0.0	10.0	2.5
NV103	1.1	1.0	8.3	4.4	2.7	0.9	0.7	0.1	0.0	7.5	0.0
NV105	1.4	4.0	5.5	5.5	2.9	2.4	0.2	0.0	0.0	5.0	0.0
NV106	1.0	5.0	5.3	7.7	0.1	2.8	4.3	0.5	0.0	5.0	0.0
NYE55-44	1.4	1.0	7.5	9.4	2.0	1.0	5.9	0.5	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 5. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium-late maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.		
								1 7/8-4"	2 1/2-4"				
			1	2	3	4	5						
Atlantic	319	246	111	4	41	42	9	4	92	51	6.1	5.4	87
AF1060-2	358	295	134	7	42	39	9	3	90	48	7.5	4.9	78
AF1331-2	277	199	90	7	48	31	11	3	90	42	6.0	4.8	75
AF1470-17	378	301	136	7	41	37	13	3	91	50	7.8	5.1	67
Kanona	237	190	86	8	52	35	3	2	90	38	5.6	4.4	78
Katahdin (std)	275	221	100	6	43	46	5	0	94	51	5.6	5.1	76
Monona	250	212	96	6	50	39	5	0	94	44	5.5	4.7	70
ND2417-6	330	266	121	11	61	25	2	1	88	27	8.8	3.9	81
ND2471-8	295	235	106	11	54	34	1	0	89	35	7.7	4.0	89
Norwis	309	278	126	3	48	46	3	0	97	49	6.2	5.2	72
NY84	355	309	140	7	57	33	3	0	93	36	8.3	4.5	69
NY87	317	263	119	7	52	32	7	2	91	39	7.0	4.7	75
NY95	300	241	109	10	62	22	5	1	89	27	7.7	4.0	91
NY98	298	267	121	6	56	35	3	0	94	38	7.1	4.3	80
NY99	246	198	89	6	42	45	5	2	92	50	4.9	5.3	78
NY101	415	373	169	7	59	31	1	1	91	32	10.0	4.3	80
NY104	289	178	80	14	61	24	1	0	86	25	8.2	3.7	80
NYE55-35	288	237	107	13	64	21	2	0	87	23	8.3	3.6	85
NYE55-44	288	253	115	7	57	33	3	0	93	36	6.8	4.4	83
St. Johns	371	280	127	5	33	46	10	6	89	56	6.9	5.6	75
Waller-Duncan													
LSD (k=100)	36	47									0.7	0.6	2
C.V. (%)	(9)	(14)									(8)	(9)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 20

Vine-kill date: September 6

Harvest date: September 19

Upstate New York Table 6. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium-late maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)				Int. Tuber Defects (%) ²			
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic	4.1	2.0	5.3	15.1	3.8	5.0	5.4	0.9	7.5	0.0	2.5
AF1060-2	3.0	1.0	6.0	7.0	2.9	1.7	2.4	0.0	0.0	0.0	0.0
AF1331-2	1.1	3.0	5.0	18.6	3.5	4.2	10.6	0.3	0.0	0.0	0.0
AF1470-17	1.3	2.0	6.0	11.0	7.8	1.1	1.7	0.4	0.0	0.0	0.0
Kanona	1.5	2.0	5.0	10.3	3.3	3.0	3.9	0.1	2.5	10.0	2.5
Katahdin (std)	3.6	2.0	4.0	14.5	7.2	1.9	4.9	0.5	17.5	2.5	0.0
Monona	1.9	3.0	4.0	9.5	3.0	4.5	1.7	0.3	0.0	0.0	0.0
ND2417-6	2.1	1.0	7.0	7.1	2.0	4.2	0.9	0.0	0.0	2.5	0.0
ND2471-8	1.1	1.0	6.3	9.8	2.6	1.7	5.4	0.1	10.0	2.5	2.5
Norwis	3.5	2.0	4.5	7.0	1.4	2.6	2.6	0.4	0.0	0.0	5.0
NY84	2.6	2.0	6.8	5.9	2.7	1.2	2.0	0.0	0.0	10.0	0.0
NY87	1.6	2.0	5.0	8.2	3.2	3.2	1.8	0.0	2.5	0.0	0.0
NY95	3.1	3.0	4.5	9.2	1.5	6.2	0.7	0.8	0.0	0.0	0.0
NY98	5.5	4.0	6.0	4.6	1.6	1.5	1.1	0.4	0.0	5.0	0.0
NY99	3.0	6.0	5.8	11.2	7.0	2.9	0.1	1.2	0.0	2.5	0.0
NY101	3.4	1.0	7.0	1.6	0.9	0.4	0.3	0.0	0.0	5.0	0.0
NY104	1.8	3.0	5.0	24.1	7.6	3.4	0.1	13.0	0.0	25.0	0.0
NYE55-35	3.3	1.0	5.8	4.5	2.5	0.8	1.1	0.1	5.0	2.5	0.0
NYE55-44	1.1	1.0	8.0	5.1	0.8	1.4	2.3	0.6	0.0	0.0	2.5
St. Johns	4.8	2.0	5.0	12.9	6.7	2.3	3.3	0.6	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 7. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the late maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8-4"	2 1/2-4"		
Allergy	302	233	7	46	42	5	0	93	47	6.7	79
Atlantic	315	256	7	49	40	4	0	93	44	6.9	89
B0178-34	339	277	9	59	29	2	1	90	31	8.7	96
B0564-8	277	237	13	70	17	0	0	87	17	8.3	78
Chipeta	322	230	6	42	44	6	2	92	50	6.5	86
Elba	345	274	5	46	41	7	1	94	48	6.9	83
Genesee	283	237	7	58	31	4	0	93	35	6.8	68
Kanona	239	203	6	62	26	5	1	93	31	5.6	78
Katahdin (std)	283	219	6	45	42	4	3	91	46	5.9	76
Monona	248	212	5	52	36	6	1	94	42	5.5	70
NYE11-45	341	303	8	62	28	2	0	92	30	8.4	70
NYE55-44	285	246	6	53	36	5	0	94	41	6.1	81
Snowden	295	246	15	74	11	0	0	85	11	9.3	88
Waller-Duncan											
LSD (k=100)	32	44								0.8	2
C.V. (%)	(8)	(12)								(9)	(2)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 20

Vine-kill date: September 6

Harvest date: October 3

Upstate New York Table 8. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the late maturity trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Allegany	6.3	1.0	5.8	15.7	10.9	2.0	2.4	0.4	0.0	2.5	0.0
Atlantic	2.4	2.0	5.0	12.3	3.7	3.4	5.2	0.0	0.0	0.0	0.0
B0178-34	2.3	2.0	3.3	8.2	2.8	2.7	2.7	0.0	0.0	0.0	2.5
B0564-8	1.0	1.0	6.0	1.4	0.7	0.4	0.1	0.2	0.0	0.0	2.5
Chipeta	6.4	2.0	4.9	20.9	9.5	3.3	7.8	0.3	12.5	0.0	0.0
Elba	8.0	1.0	7.0	15.2	10.4	1.7	3.0	0.1	15.0	15.0	2.5
Genesee	4.1	2.0	6.5	9.0	5.6	2.0	1.4	0.0	0.0	10.0	5.0
Kanona	1.5	2.0	5.0	7.8	5.0	2.1	0.5	0.2	0.0	5.0	2.5
Katahdin (std)	3.8	2.0	5.0	13.8	9.7	2.0	2.1	0.0	22.5	0.0	0.0
Monona	1.9	3.3	3.0	8.2	2.1	4.3	1.5	0.3	0.0	0.0	0.0
NYE11-45	5.0	2.5	7.4	3.6	2.9	0.6	0.1	0.0	0.0	5.0	15.0
NYE55-44	1.1	2.0	7.8	7.7	1.5	2.5	3.6	0.1	0.0	2.5	0.0
Snowden	2.1	1.0	3.3	2.2	0.9	0.5	0.8	0.0	0.0	17.5	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 9. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the Cornell advanced clones trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	std	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.	
				1	2	3	4	5	1 7/8-4"	2 1/2-4"			
Atlantic Kanona	349	300	144	3	48	39	7	3	94	46	6.6	5.5	87
	224	194	93	5	52	38	5	0	95	43	4.9	4.8	76
Katahdin Monona (std)	272	215	103	3	33	48	14	2	95	62	4.7	6.0	74
	256	208	100	7	47	36	9	1	92	45	5.4	4.9	71
M1-2 M14-1	390	336	162	10	61	26	3	0	90	29	9.8	4.2	83
	302	264	127	7	61	28	3	1	92	31	7.3	4.3	81
M14-6 M14-11	304	245	118	6	30	48	12	4	90	60	5.6	5.7	82
	239	193	93	9	59	29	3	0	91	32	6.2	4.0	79
M19-3 M19-4	358	325	156	3	43	46	7	1	96	53	6.6	5.6	67
	286	246	118	6	54	33	6	1	93	39	6.4	4.6	76
M28-2 M28-3	324	285	137	8	65	24	2	1	91	26	8.1	4.1	71
	348	313	150	2	41	52	5	0	98	57	6.5	5.6	76
M32-7 M39-4	327	273	131	6	57	33	3	1	93	36	7.5	4.6	81
	334	274	132	11	76	12	1	0	89	13	9.8	3.6	90
Snowden	302	251	121	8	63	26	2	1	91	28	7.6	4.2	87
Waller-Duncan LSD (k=100)	30	30									0.6	0.4	3
C.V. (%)	(7)	(9)									(7)	(7)	(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 23

Vine-kill date: September 6

Harvest date: October 4

Upstate New York Table 10. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the Cornell advanced clones trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
Atlantic	6.9	1.0	6.0	8.0	4.1	3.0	0.9	0.0	2.5	2.5	0.0
Kanona	3.9	2.0	5.5	8.8	4.3	2.2	2.3	0.0	2.5	22.5	0.0
Katahdin	7.6	2.0	6.5	16.2	12.8	2.7	0.4	0.3	40.0	2.5	0.0
Monona (std)	4.8	3.0	3.0	10.7	2.0	7.5	0.8	0.4	2.5	2.5	0.0
M1-2	4.5	1.0	3.8	4.0	1.6	1.6	0.8	0.0	15.0	5.0	5.0
M14-1	4.8	2.0	5.3	4.5	1.5	1.3	1.4	0.3	2.5	5.0	2.5
M14-6	7.3	1.0	5.8	9.6	2.9	3.5	3.2	0.0	2.5	10.0	0.0
M14-11	1.6	1.0	5.3	10.0	0.2	4.1	5.7	0.0	0.0	2.5	0.0
M19-3	3.6	2.0	8.0	4.7	2.9	1.5	0.3	0.0	0.0	0.0	2.5
M19-4	4.5	2.0	5.0	7.8	5.0	1.8	1.0	0.0	0.0	5.0	2.5
M28-2	3.9	2.0	6.9	2.8	1.1	1.4	0.3	0.0	0.0	0.0	0.0
M28-3	6.5	2.0	6.8	7.8	3.8	3.5	0.5	0.0	0.0	0.0	0.0
M32-7	3.6	2.0	6.6	9.7	6.1	3.1	0.4	0.1	22.5	0.0	0.0
M39-4	5.8	1.0	4.8	7.4	3.4	3.0	1.0	0.0	7.5	0.0	0.0
Snowden	6.3	1.0	3.3	7.4	3.4	3.7	0.3	0.0	7.5	20.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 11. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the red and purple-skinned variety trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.		
			1	2	3	4	5	1 7/8-4"	2 1/2-4"				
B0616-1	262	201	69	20	64	15	1	0	80	16	8.2	3.3	73
B0811-13	344	286	99	14	67	18	1	0	86	19	9.8	3.6	76
Chieftain (std)	325	290	100	8	72	18	2	0	92	20	8.2	4.1	69
Dark Red Norland	270	220	76	16	75	9	0	0	84	9	8.7	3.2	63
Desiree	360	254	88	13	68	17	2	0	87	19	10.6	3.5	82
M252-1 (purple)	302	214	74	6	45	45	4	0	94	49	6.4	4.9	66
N38-1	181	162	56	9	63	27	1	0	91	28	4.6	4.1	72
N38-4	236	213	74	4	40	47	8	1	95	55	4.5	5.5	63
N38-5	275	237	82	9	69	21	1	0	91	22	7.4	3.9	73
N40-1 (purple)	355	303	105	4	44	44	7	1	95	51	6.8	5.4	81
N40-2	284	225	78	10	71	19	0	0	90	19	8.0	3.7	79
N51-1	339	249	86	5	24	43	19	9	86	62	5.6	6.3	71
N51-2	261	222	77	3	32	44	18	3	94	62	4.4	6.2	77
NY97	330	272	94	6	42	39	9	4	90	48	6.5	5.3	65
Red Pontiac	349	309	107	5	44	45	5	1	94	50	7.1	5.1	68
Redsen	269	203	70	22	68	10	0	0	78	10	8.7	3.2	69
Waller-Duncan													
LSD (k=100)	41	39								0.9	0.6		3
C.V. (%)	(9)	(10)								(9)	(9)		(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 23

Vine-kill date: September 6

Harvest date: October 4

Upstate New York Table 12. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the red and purple-skinned variety trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
B0616-1	2.8	2.0	3.7	3.4	0.6	1.0	1.8	0.0	0.0	0.0	16.7
B0811-13	3.7	7.0	1.0	3.4	0.8	2.6	0.0	0.0	0.0	0.0	0.0
Chieftain (std)	2.8	3.0	4.3	2.4	0.4	1.3	0.7	0.0	0.0	0.0	0.0
Dark Red Norland	1.0	3.0	4.0	2.1	0.2	1.5	0.4	0.0	0.0	0.0	0.0
Desiree	8.0	4.0	2.0	16.5	1.6	12.1	2.8	0.0	3.3	0.0	0.0
M252-1 (purple)	8.8	7.0	4.0	23.2	0.2	19.8	3.2	0.0	0.0	0.0	6.7
N38-1	5.5	2.0	4.0	1.3	0.1	1.2	0.0	0.0	0.0	0.0	3.3
N38-4	5.3	4.0	7.0	4.7	0.5	2.6	1.6	0.0	0.0	6.7	0.0
N38-5	3.0	2.0	5.3	4.7	0.1	1.4	3.2	0.0	0.0	0.0	0.0
N40-1 (purple)	6.5	7.0	2.7	9.5	0.8	8.2	0.5	0.0	13.3	0.0	0.0
N40-2	7.0	7.7	3.7	10.9	1.9	9.0	0.0	0.0	6.7	0.0	0.0
N51-1	7.3	5.0	3.3	12.3	4.8	6.2	1.1	0.2	0.0	0.0	0.0
N51-2	4.3	6.0	4.7	8.4	0.5	6.0	1.9	0.0	0.0	0.0	0.0
NY97	4.3	6.0	5.0	7.3	0.9	6.2	0.1	0.1	0.0	0.0	0.0
Red Pontiac	5.3	3.0	2.0	5.4	0.5	4.9	0.0	0.0	10.0	0.0	3.3
Redsen	1.0	1.0	6.3	2.5	0.1	1.9	0.4	0.1	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 13. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the russet trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)					Mean Tuber #/ft wt(oz)	Spec. Grav.
			1	2	3	4	5	4 to 12 oz	8 oz	over 12 oz	over 12 oz			
AF1481-4	234	143	29	54	13	4	0	67	17	4		5.3	4.6	81
BelRus	219	138	33	51	14	2	0	65	16	2		5.2	4.4	83
B0493-8	278	184	14	52	25	5	4	77	34	9		4.9	5.9	78
B0927-9SG	304	187	27	51	20	1	1	71	22	2		6.9	4.6	83
B0950-6	226	126	15	48	29	3	5	77	37	8		4.0	5.9	80
B9922-11	224	143	21	51	21	7	0	72	28	7		4.6	5.0	89
Rus. Bake-King	248	184	23	62	15	0	0	77	15	0		5.3	4.9	90
Rus. Burbank (std)	288	105	29	51	16	3	1	67	20	4		6.7	4.5	84
Rus. Norkotah	246	146	32	51	16	1	0	67	17	1		6.0	4.3	75
Waller-Duncan														
LSD (k=100)	30	38										0.8	0.5	3
C.V. (%)	(8)	(16)										(10)	(7)	(2)

¹Size classes: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz

Plant date: May 5

Vine-kill date: August 30

Harvest date: September 12

Upstate New York Table 14. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the russet trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1481-4 BelRus	3.0	5.0	7.5	10.2	3.2	5.3	1.7	0.0	2.5	0.0	0.0
	1.8	5.0	6.3	4.6	0.5	2.9	0.2	1.0	0.0	0.0	0.0
B0493-8 B0927-9SG	2.8	6.0	4.5	15.6	2.7	9.2	2.1	1.6	0.0	0.0	0.0
	3.7	5.0	6.3	10.6	3.0	3.1	2.3	2.2	0.0	3.3	0.0
B0950-6 B9922-11	1.3	6.0	6.0	24.5	2.3	10.7	9.0	2.5	3.3	6.7	0.0
	2.6	5.0	5.5	15.3	4.7	6.8	1.0	2.8	0.0	2.5	0.0
Rus. Bake-King Rus. Burbank (std) Rus. Norkotah	4.5	2.0	5.0	2.9	0.2	0.9	0.5	1.3	2.5	25.0	2.5
	6.1	7.0	3.0	33.4	1.8	26.4	4.6	0.6	10.0	5.0	0.0
	1.4	6.0	7.3	8.9	2.6	4.5	1.1	0.7	5.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 15. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the USDA advanced clones trial grown at Freeville, New York - 1994.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class ¹ (% of total yield)					Size Distrib. (%)		Mean Tuber #/ft wt(oz)	Spec. Grav.
			1	2	3	4	5	1 7/8-4"	2 1/2-4"		
B0564-8	269	218	13	51	33	3	0	87	36	6.7	4.2
B0585-5	297	209	5	20	56	14	5	90	70	4.7	6.5
B0587-9	259	233	6	44	44	6	0	94	50	5.5	4.9
B0613-2	329	253	5	31	46	15	3	92	61	5.8	5.9
B0684-5	291	258	3	32	54	7	4	93	61	5.2	5.9
B0874-1	319	284	9	43	40	8	0	91	48	6.2	5.3
B0892-7	246	214	8	47	39	6	0	92	45	5.5	4.6
B0996-5	233	168	11	39	38	9	3	86	47	5.1	4.7
B1022-8	296	242	4	29	53	10	4	92	63	5.3	5.9
B1029-6	299	244	13	47	38	1	1	86	39	7.8	4.0
Katahdin (std)	261	197	8	33	53	5	1	91	58	5.2	5.2
Monona	246	218	8	37	47	7	1	91	54	5.1	5.1
Waller-Duncan LSD (k=100)	51	46								0.9	1.2
C.V. (%)	(10)	(11)								(10)	(13)
											(3)

¹Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant date: May 13

Vine-kill date (mowed): August 29

Harvest dates: September 1-2

Upstate New York Table 16. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the USDA advanced clones trial grown at Freeville, New York - 1994.

Variety/Clone	Plant ¹ Mat. at Vinekill	Tuber Data ¹		External Tuber Defects (%)					Int. Tuber Defects (%) ²		
		Shape	Appear.	Total	Sun- green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
B0564-8	3.7	1.0	7.5	5.4	1.7	0.4	1.4	1.9	0.0	0.0	0.0
B0585-5	5.7	1.0	7.7	19.3	3.1	1.6	14.6	0.0	3.3	0.0	0.0
B0587-9	5.2	1.0	7.8	4.1	1.7	0.1	1.9	0.4	0.0	0.0	0.0
B0613-2	5.7	1.0	5.0	15.0	3.7	2.0	8.8	0.5	0.0	0.0	0.0
B0684-5	4.2	3.0	8.0	4.0	1.0	0.2	2.8	0.0	3.3	0.0	0.0
B0874-1	5.8	1.0	6.3	1.8	0.6	1.1	0.1	0.0	3.3	0.0	0.0
B0892-7	6.0	1.0	6.7	4.5	3.1	1.3	0.1	0.0	0.0	0.0	0.0
B0996-5	5.7	1.0	5.8	13.8	2.5	2.7	6.6	2.0	0.0	0.0	6.7
B1022-8	6.5	1.0	4.3	10.5	2.5	0.8	6.2	1.0	10.0	0.0	0.0
B1029-6	7.7	1.0	5.7	4.5	2.1	0.9	1.3	0.2	0.0	0.0	0.0
Katahdin (std)	8.5	1.0	5.3	15.5	9.7	2.7	2.4	0.7	36.7	0.0	0.0
Monona	6.5	2.0	3.3	2.9	0.4	1.2	0.7	0.6	0.0	0.0	0.0

¹See the standard NE107 rating system for a key to these ratings, in the appendix to this report.

²Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 17a. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County mineral (sand) soil, white-skinned (19 cultivars) and russet-skinned (2 cultivars) variety trial grown near Cato, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A		Size Distribution ¹ (% of Total Yield)					Mean Tuber #/ft wt(oz)		Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec Grav
		1	2	3	4	5	S	K	G	R	H	V	N						
Atlantic	301	279	91	7	93	0	--	--	5.4	5.8	1	0	0	0	0	0	0	84	
AF1060-2	548	478	156	11	89	0	--	--	13.5	4.2	0	2	0	0	0	0	0	78	
B0178-34	422	385	125	8	92	0	--	--	9.2	4.8	1	0	0	0	0	0	0	93	
B0684-5	398	365	119	6	79	15	--	--	6.5	6.4	2	0	0	0	0	0	0	69	
B0874-1	408	367	120	10	88	2	--	--	8.0	5.3	0	0	0	0	0	0	0	83	
B9922-11 (russet)	463	376	122	4	31	42	13	10	5.5	8.7	5	0	0	0	10	0	0	91	
Genesee	329	287	94	11	77	12	--	--	6.9	5.0	1	0	0	1	0	20	0	68	
Katahdin (std)	383	307	100	7	73	20	--	--	5.7	7.0	13	0	0	0	0	0	0	72	
NY84	471	409	133	10	86	4	--	--	9.3	5.3	1	3	0	0	0	0	0	65	
NY87	428	375	122	10	81	9	--	--	8.8	5.1	2	1	0	0	0	0	0	73	
NY98	491	432	141	7	83	10	--	--	9.2	5.6	2	1	0	1	0	0	0	79	
NY101	554	479	156	10	88	2	--	--	11.8	4.9	3	0	0	0	0	0	0	76	
NY102	447	403	131	8	92	0	--	--	10.8	4.3	1	0	0	0	0	0	0	84	
NY103	447	396	129	9	91	0	--	--	9.6	4.8	1	1	0	0	0	0	0	78	
NY104	451	328	107	18	81	1	--	--	12.0	3.9	7	1	0	2	0	0	0	79	
NY105	474	416	135	8	82	10	--	--	7.5	6.5	2	2	0	1	0	0	0	76	
NY106	311	237	77	24	76	0	--	--	9.3	3.5	0	0	0	0	0	0	0	75	
NYE11-45	427	346	113	17	83	0	--	--	11.4	3.9	1	1	0	0	0	0	30	69	

(Continued on next page)

Upstate New York Table 17a. - (Cont.) - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County mineral (sand) soil, white-skinned (19 cultivars) and russet-skinned (2 cultivars) variety trial grown near Cato, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	std.	Size Distribution ¹ (% of Total Yield)					Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec Gray
				1	2	3	4	5		S	K	G	R	H	V	N		
NYE55-44	270	191	62	30	70	0	--	--	8.8	3.2	0	0	0	0	0	0	0	81
Russet Norkotah	344	224	73	32	43	21	4	0	7.9	4.6	1	1	0	0	0	0	10	80
St. Johns	471	429	140	9	86	5	--	--	7.8	6.3	0	0	0	0	0	0	0	77

¹Size categories: 1 = under 2", 2 = 2 to 4", 3 = over 4"; except the russets, B9922-11 and Russet Norkotah, were graded by weight: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz.

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack; R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: Two replications were planted of most entries, except only a single plot was planted of the five named varieties, as well as AF1060-2 and the four numbered clones having a "B" prefix.

Plant date: April 28

Fertilizer: 70 gal/A 8-16-8 at planting.

Vine-kill: Diquat 1 pt/A followed one week later with Gramoxone 1 pt/A

Irrigation: Three times, 1" each time

Vine-kill dates: August 16 and 23

Harvest date: August 30

Two sidedressings of 50 gal/A and 45 gal/A 15.5-0-0 (Calcium Nitrate).

Upstate New York Table 17b. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Cayuga County mineral (sand) soil, red and purple-skinned variety trial grown near Cato, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A		Size Distribution ¹ (% of Total Yield)					Mean Tuber #/ft wt(oz)		Pct. External ²				Pct. Internal ³				Spec Grav
											Tuber Defects		Tuber Defects		Tuber Defects		Tuber Defects		
		1	2	3	4	5	S	K	G	R	H	V	N	N					
B0616-1	295	260	65	10	90	0	--	--	6.5	4.8	0	2	0	0	0	0	50	72	
B0984-1	374	357	89	5	71	24	--	--	5.9	6.6	0	0	0	0	0	20	0	78	
B0985-3	323	284	71	10	83	7	--	--	6.7	5.0	0	0	2	0	0	0	0	66	
Chieftain (std)	454	400	100	8	81	11	--	--	7.9	6.0	1	0	2	1	0	0	30	68	
M252-1 (purple)	399	262	65	23	49	22	5	1	8.5	4.9	0	10	0	0	0	0	60	63	
N38-1	320	266	66	14	80	6	--	--	7.3	4.6	0	2	1	0	0	0	0	68	
N38-4	376	356	89	5	81	14	--	--	6.2	6.3	0	0	0	0	0	0	0	67	
N38-5	396	356	89	9	86	5	--	--	8.2	5.0	1	1	0	0	0	0	0	75	
N40-1 (purple)	430	339	85	17	59	19	3	2	8.8	5.1	0	3	0	0	10	0	0	79	
N40-2	414	189	47	30	41	21	8	1	8.9	4.8	5	17	1	2	0	0	0	76	
N51-1	348	306	77	9	83	8	--	--	6.5	5.6	0	2	1	0	0	0	0	64	
N51-2	371	331	83	7	72	21	--	--	6.4	6.1	1	2	0	0	0	0	0	72	
Dark Red Norland	323	206	52	34	66	0	--	--	11.9	2.8	0	2	0	0	0	0	0	65	
NY97	399	317	79	12	77	11	--	--	8.0	5.2	1	8	0	0	0	0	0	67	
Redsen	368	306	77	16	84	0	--	--	9.0	4.3	1	0	0	0	0	0	0	71	

¹Size categories: 1 = under 2", 2 = 2 to 4", 3 = over 4"; except M252-1, N40-1, and N40-2 were graded by weight: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack; R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: Two replications were planted of most entries, except only a single plot was planted of the three named varieties and the three numbered clones having a "B" prefix.

Plant date: April 28

Vine-kill dates: August 16 and 23

Harvest date: August 30

Fertilizer: 70 gal/A 8-16-8 at planting. Two sidedressings of 50 gal/A and 45 gal/A 15.5-0-0 (Calcium Nitrate).

Vine-kill: Diquat 1 pt/A followed one week later with Gramoxone 1 pt/A

Irrigation: Three times, 1" each time

Upstate New York Table 18a. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Oswego County muck soil, white-skinned (19 cultivars) and russet-skinned (2 cultivars) variety trial grown near Oswego, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distribution ¹ (% of Total Yield)					Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec Grav	
			1 2 3 4 5						S	K	G	R	H	V	N			
Atlantic	384	246	83	13	84	3	--	--	7.7	5.2	8	13	3	0	20	0	0	85
AF1060-2	629	535	179	14	84	2	--	--	14.7	4.4	1	0	0	0	0	0	0	78
B0178-34	386	352	118	5	90	5	--	--	6.7	6.0	1	2	0	0	0	0	0	93
B0684-5	419	367	123	3	88	9	--	--	6.2	7.0	10	0	0	0	0	0	0	71
B0874-1	292	252	84	9	88	2	--	--	6.7	4.5	2	0	0	2	0	0	0	82
B9922-11 (russet)	386	279	94	9	49	30	12	0	6.3	6.4	2	2	15	0	0	0	10	87
Genesee	552	390	131	13	78	9	--	--	11.3	5.1	13	1	2	1	0	0	10	69
Katahdin (std)	417	298	100	14	81	5	--	--	8.5	5.1	12	1	3	0	20	0	20	80
NY84	416	285	96	24	76	0	--	--	11.9	3.7	8	0	1	0	0	0	0	65
NY87	506	437	147	7	92	1	--	--	9.5	5.5	6	1	0	0	0	0	0	73
NY98	409	279	94	15	83	2	--	--	10.1	4.2	11	1	1	4	0	0	5	77
NY101	482	418	140	9	91	0	--	--	10.4	4.8	3	0	0	0	15	0	15	73
NY102	401	335	113	12	88	0	--	--	9.7	4.3	4	1	0	0	5	0	5	86
NY103	505	430	144	8	90	2	--	--	9.5	5.5	7	0	0	0	0	0	0	76
NY104	419	300	101	13	81	6	--	--	9.6	4.5	12	2	0	0	10	0	0	82
NY105	486	397	133	8	80	12	--	--	8.5	6.0	8	1	1	0	15	0	0	81
NYE11-45	450	360	121	13	86	1	--	--	11.6	4.0	6	0	0	0	0	0	0	70
NYE55-44	485	398	134	9	82	9	--	--	8.4	6.0	5	3	1	1	15	0	0	83

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Upstate New York Table 18a. - (Cont.) - Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Oswego County muck soil, white-skinned (19 cultivars) and russet-skinned (2 cultivars) variety trial grown near Oswego, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distribution ¹ (% of Total Yield)					Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec Grav
			1	2	3	4	5		S	K	G	R	H	V	N		
Russet Norkotah	405	317	106	19	60	12	9	0	8.5	5.0	2	1	0	0	0	0	74
St. Johns	463	419	140	4	85	11	--	--	6.7	7.2	4	0	3	0	0	0	75

¹Size categories: 1 = under 2", 2 = 2 to 4", 3 = over 4"; except the russets, B9922-11 and Russet Norkotah, were graded by weight: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz.

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack; R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: Two replications were planted of most entries, except only a single plot was planted of the five named varieties, as well as AF1060-2 and the four numbered clones having a "B" prefix.

Plant date: April 28

Fertilizer: 60 gal/A 6-18-6 at planting

Vine-kill: Diquat 1 pt/A

Irrigation: Two times, 1.25" each time

Vine-kill date: August 23

Harvest date: August 30

Upstate New York Table 18b. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Oswego County muck soil, red and purple-skinned variety trial grown near Oswego, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distribution ¹ (% of Total Yield)					Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec Grav
			1	2	3	4	5		S	K	G	R	H	V	N		
B0616-1	352	286	79	12	88	0	--	--	8.2	4.5	6	0	1	0	0	0	69
B0984-1	327	284	78	5	86	9	--	--	6.0	5.7	7	1	0	0	10	0	74
B0985-3	388	293	81	12	84	4	--	--	8.5	4.7	5	5	2	1	0	0	59
Chieftain (std)	469	362	100	11	86	3	--	--	10.2	4.8	3	3	4	2	0	0	72
M252-1 (purple)	295	187	52	30	62	8	0	0	7.2	4.3	3	4	1	0	0	20	61
N38-1	369	287	79	19	79	2	--	--	9.6	4.0	1	0	2	0	0	0	75
N38-4	351	263	73	10	87	3	--	--	6.0	6.1	4	2	10	0	0	0	63
N38-5	431	326	90	15	85	0	--	--	10.9	4.1	5	0	4	0	0	5	81
N40-1 (purple)	366	217	60	36	58	6	0	0	9.9	3.9	3	2	0	0	0	0	76
N40-2	408	195	54	39	48	13	0	0	10.6	4.0	3	7	3	0	0	0	73
N51-1	450	408	113	6	80	14	--	--	6.8	6.9	2	1	0	0	0	0	66
N51-2	360	255	71	12	80	8	--	--	6.8	5.5	9	1	5	2	0	0	72
Dark Red Norland	457	379	105	10	90	0	--	--	12.0	4.0	6	0	1	0	10	0	71
NY97	339	268	74	17	80	3	--	--	7.9	4.5	2	2	0	1	0	5	66
Redsen	330	218	60	25	75	0	--	--	10.6	3.2	5	3	1	0	0	0	66

¹Size categories: 1 = under 2", 2 = 2 to 4", 3 = over 4"; except the russets, B9922-11 and Russet Norkotah, were graded by weight: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz.

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack; R = Rot

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: Two replications were planted of most entries, except only a single plot was planted of the three named varieties and the three numbered clones having a "B" prefix.

Plant date: April 28

Fertilizer: 60 gal/A 6-18-6 at planting

Vine-kill: Diquat 1 pt/A

Irrigation: Two times, 1.25" each time

Vine-kill date: August 23

Harvest date: August 30

Upstate New York Table 19. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Steuben County mineral soil variety trial grown near Arkport, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects						Pct. Internal ³ Tuber Defects				Spec. Grav.
			1	2	3		S	K	G	R	H	V	N				
Allegany	360	317	115	5	82	13	6.3	6.3	6	1	0	0	5	0	0	87	
Atlantic	358	327	118	3	84	13	5.8	6.8	4	2	1	0	0	5	0	94	
B0178-34	311	279	101	6	92	2	6.1	5.6	5	0	0	0	8	0	0	101	
Kanona	390	329	119	5	73	22	6.4	6.8	10	0	0	0	0	0	0	80	
Monona (std)	325	277	100	6	87	7	6.6	5.5	8	0	0	0	0	0	0	78	
NY87	393	371	134	3	87	10	7.7	5.6	2	0	0	0	5	0	0	83	
NY95	287	251	90	8	87	5	6.1	5.2	3	1	0	0	0	0	0	95	
NY98	421	379	137	4	89	7	8.0	5.8	5	0	0	0	0	0	5	83	
NY99	302	273	99	5	91	4	5.1	6.5	3	0	0	0	0	0	0	80	
NY102	422	389	140	5	94	1	9.0	5.2	2	1	0	0	5	0	0	92	
NY103	403	369	133	6	94	0	9.1	4.9	1	1	0	0	0	0	5	83	
NYE11-45	344	315	114	7	93	0	7.5	5.1	1	0	0	0	0	0	0	76	
NYE55-35	394	334	120	14	86	0	11.9	3.7	1	1	0	0	0	0	0	93	
NYE55-44	285	252	91	10	90	0	7.4	4.2	1	0	0	0	0	0	0	86	
Snowden	385	324	117	11	87	2	10.2	4.2	4	0	0	0	0	0	5	95	
Waller-Duncan																	
LSD (k=100)	N.S.	N.S.					2.6	1.0								6	
C.V. (%)	(18)	(18)					(15)	(8)								(3)	

¹Size categories: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot.

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications.

Plant date: May 20

Vine-kill dates: Sept. 7 and 12

Harvest date: Sept. 28

Fertilizer: 1400 lb/A 8-16-8 at planting. Side-dressed 34 lb/A N as ammonium nitrate.

Vine-kill: Two applications of Diquat 1 pt/A + Induce

Irrigation: None

Update New York Table 20. Yield, marketable yield, grade size distribution, tuber number per foot and weight, external and internal defects, and specific gravity for the Wyoming County mineral soil variety trial grown near Hermitage, New York - 1994.

Variety or Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. ¹ (% of Tot. Yld.)			Mean Tuber #/ft wt(oz)	Pct. External ² Tuber Defects				Pct. Internal ³ Tuber Defects				Spec. Grav.	
			1	2	3		S	K	G	R	H	V	N			
Allegany	537	464	116	4	86	10	8.7	6.8	9	0	0	0	5	0	0	80
Atlantic	427	302	76	10	84	6	9.0	5.2	8	8	3	0	15	5	5	89
B0178-34	497	403	101	8	87	5	10.2	5.4	9	1	1	0	0	0	5	93
Kanona	570	484	121	5	88	7	8.6	7.3	9	0	1	0	5	0	5	78
Monona (std)	476	398	100	7	88	5	10.0	5.2	8	1	0	0	0	0	0	74
NY87	532	474	119	6	92	2	11.0	5.3	4	1	0	0	0	0	0	77
NY95	488	388	97	11	86	3	11.2	4.8	6	3	1	0	0	0	0	91
NY98	450	371	93	10	89	1	10.4	4.8	6	0	1	0	0	0	0	77
NY99	469	343	86	9	78	13	8.0	6.5	17	0	0	0	0	0	0	78
NY102	432	360	90	12	88	0	11.5	4.1	4	1	0	0	5	0	5	88
NY103	423	332	83	10	89	1	9.7	4.8	9	2	1	0	0	0	5	74
NYE11-45	478	355	89	17	82	1	12.7	4.1	7	1	0	0	5	5	0	72
NYE55-35	437	368	92	13	87	0	12.3	3.9	3	0	0	0	0	0	0	91
NYE55-44	432	358	90	10	90	0	10.7	4.4	4	1	2	0	0	0	0	81
Snowden	420	347	87	10	90	0	9.3	5.0	4	1	2	0	10	0	0	88
Waller-Duncan																
LSD (k=100)	73	86					1.4	0.7								5
C.V. (%)	(7)	(10)					(6)	(7)								(3)

¹Size categories: 1 = under 2", 2 = 2-4", 3 = over 4"

²S = Sun-green, K = Knobby/Misshapen, G = Growth Crack, R = Rot.

³H = Hollow Heart, V = Vascular Discoloration, N = Internal Necrosis. Based on a 10-tuber sample per plot.

NOTE: This trial had two replications.

Plant date: May 9

Vine-kill dates: Sept. 6 and 12

Harvest date: Oct. 5

Fertilizer: 1200 lb/A 10-20-15-1.8Mg at planting. Side-dressed 68 lb/A N.

In spring plowed down a fall-seeded clover stand in wheat stubble.

Vine-kill: Two applications of Diquat 1 pt/A + crop oil

Irrigation: Six times, up to 1" each time

1994 Results of Potato Variety and Cultural Practices Studies on Long Island, New York

J.B. Sieczka, I.D. Rybus, R.C. Neese and D.D. Moyer

Introduction:

Experiments conducted in 1994 are part of an ongoing program evaluating promising golden nematode resistant and russet-and red-skinned potato clones under Long Island conditions. Fifty-four potato clones were evaluated in replicated experiments conducted at the Long Island Horticultural Research Laboratory (LIHRL). Data were collected on total and marketable yields, size distribution, internal and external defects, and general appearance of potato tubers. Demonstration plots of advanced lines were established at Corwith Farms in Water Mill, New York.

Experiments to determine the effect of nitrogen rate and moisture stress on quick nitrogen readings and yield and quality of Allegany were established in 1992 and 1993. In 1994, Superior and Allegany were included in the experiment. Nitrogen rates were: 75, 150 and 225 lbs/A. The early season moisture-stressed plots received 7.6 inches of irrigation water whereas the non-stressed plots received 12.6 inches. After July 9th all plots were irrigated the same. Only 1994 yield data are presented in this publication.

An experiment designed to determine the effect of potash level on Allegany tuber yield, size, appearance and blackspot susceptibility was conducted in 1994. Potash rates investigated were: 0, 150, 300, and 600 lbs/A. Only yield data are presented in this publication.

Methods

The yield in 1994 was relatively low because of hot and very dry conditions and an early infestation of leaf hopper. Irrigation of approximately 1.3 inches was applied on a weekly basis for most of the season (about 12.6 inches were applied from 6/10/94 to 8/13/94). The randomized complete block design with four replications was used in all but one of the variety experiments. Plot size was 2 rows by 12 feet. Fertilizer was applied at a rate of 1000 lbs/A of 10-20-20 in bands at time of planting (4/21-25/94). An additional 60 lbs N/A were applied when plants were 4 to 6 inches tall. Vine maturity was rated on 8/9/94 for the early season experiment and on 8/30 to 9/1/94 for other experiments. Vines were desiccated on 9/13/94. The early variety experiment was harvested on

8/17 and the observational trial on 9/19/94. The other variety experiments were harvested on 9/22/94. Specific gravity was determined by the hydrometer method. Internal defects were determined on 10 tubers per replication in the 3.3 to 4 inch or 12 to 16 oz. categories for round and russet experiments, respectively. Tables summarize maturity ratings, tuber appearance and shape. Vine maturity ratings were based on a scale of 1 to 9, 1 = completely dead, 9 = green and vigorous. Appearance ratings were based on a scale of 1 to 9, 1 = extremely poor, 9 = excellent appearance. Shape abbreviations are R = round, O = oblong, L = long. Other data on tuber appearance, shape, skin color and texture and eye-depth are listed in Table 1. Abbreviations for the descriptions are also listed for that table.

Early White-skinned Varieties

The highest total and marketable yields were produced by Sunrise, Portage, Monona, NY87 and Yukon Gold (Tables 2 & 3). Monona and Yukon Gold had a high percentage of tubers with internal necrosis. F80054 tubers had the highest specific gravity but yield was very low and many tubers had internal necrosis.

NE107 White-skinned Varieties

NYE11-45 produced a high yield of attractive tubers (Tables 4 & 5). St. Johns and Atlantic also had yields significantly higher than the standard, Katahdin. Atlantic tubers had the best specific gravity but 66% of the tubers cut had internal necrosis. Chipeta and Snowden had internal necrosis problems and poor appearance. Entries with more than 10% external defects were Castile, Chipeta, Kennebec, and St. Johns.

White-skinned Clones from NE Potato Breeding Programs

NY 101 had the best total yield but marketable yield was not significantly different from the standard, Katahdin (Tables 6 & 7). Norwis and AF1609-1 had high total and marketable yield but had marginal appearance. L18-9 tubers were attractive but yield was low. Tubers of Allegany and B0587-9 had the highest specific gravity readings. Eighty per cent of B1022-8 tubers had internal necrosis and 8% were hollow. The other

lines with internal necrosis problems were Norwis, NY99, NY101 and AF1609-1. External defects plagued Katahdin, AF1609-1, B1022-8, L8-4, NY101, and NY103.

Red-skinned Lines

Chieftain produced the highest total and marketable yield (Tables 8 & 9). The total yield of NYN40-2, NYM252-1 and B0903-2 was not significantly different from Chieftain but these lines had a very high percentage of misshapen tubers. Specific gravity readings of NYN40-2, B0903-2 and B0811-13 were equal to or greater than 1.060. NDO2438-7 and NDO2686-6R had the best appearance ratings. Both lines and NDO2469-1R had dark red skin and all had a tendency to skin. NYM252-1 and B0903-2 had purple skinned tubers. Internal color of B0811-13 was yellow, NYM252-1 was purple and NYM40-2 was pink.

Russet Selections

B9922-11 had the highest marketable yield and specific gravity but appearance was marginal (Tables 10 & 11). Goldrush and BelRus yielded poorly. Misshapen tubers were the major defects of Goldrush and B0169-56. The best appearing clones were Coastal Russet and B0169-56. Lines with more than 10% of hollow heart were B9922-11 and B0169-56. BelRus and B9922-11 tubers had specific gravity readings greater than 1.070.

Observation Trial

Data from a non-replicated trial on yield, appearance, specific gravity and internal defects of early selection clones and recently released varieties are presented in (Table 12).

Moisture Stress X Nitrogen Rate

The yield data in Table 13 show that early season moisture stress had a marked effect on the yield of Superior and Allegany. Allegany at 75 and 150 lbs N/A and Superior at 75, 150, and 225 lbs N/A in the early season irrigated areas produced the highest yields. The yield of Allegany at 225 lbs N/A in the irrigated area was similar to yields of stressed Allegany treatments. Superior was most affected by early season moisture stress.

Potash Rate

Rates of 0, 150, 300, and 600 lbs potash/A were evaluated on Allegany potatoes in 1993 and 1994 (Table 14). In 1993 there were no significant

differences in yield between 0, 150, and 300 lbs potash/A. A reduction in total and marketable yield resulted when 600 lbs/A of potash was applied. In 1994, the 0 and 150 lbs/A treatments were not significantly different from each other but were significantly higher than the 300 and 600 lbs/A treatments. In both years, specific gravity decreased as potash rate increased.

Storage Results

After-cooking darkening and blackspot ratings for clones grown in 1993 are given in (Table 15).

Acknowledgments

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Long Island Table 1. Tuber characteristics of potato clones grown on Long Island, N.Y.-1994.

CLONE	Table	Color	Texture	Shape	Depth	Eye Depth		Appearance	Comments
						Lateral	Apical		
Allegany	4,5,6,7	Bu	SN-N	R-O	MT	MS	MD-D	6	Irr, some Sc
Atlantic	4,5	Bu	N	R-O	MT	MS	MD	5	Irr, Sc
BelRus	10,11	B	P-HR	L	SF	S	S	6	Rus not uniform
Castile	4,5	W	RS	O	SF	MS	MS	6	Irr, Kn
Chieftain	8,9	Pi	RS	O-R	MT	MS	MS	6	Sk
Chipeta (AC80545-1)	4,5	Bu	N	R-O	MT	MS	MD	4	Rg!
Coastal Russet	10,11	T	LR	L	MT	S	S	7	
Goldrush	10,11	B	MR	L	MT	S	S	4	Irr, Kn, Transl.
Katahdin	4,5,6,7	W	RS	R-O	SF	MS-S	MD-MS	6	St, Sl Irr
Kennebec	4,5	W	RS	O	SF	MS	MS	4	Irr, L
Monona	2,3	W	S	O	SF	MD	MD	6	Irr, Some Sk
Norland	8,9	LR	S	R	MT	MS	MS	6	H Sp
Norwis	6,7	W	S	R-O	MT	MD	D-MD	5	Irr
Portage	2,3	W	RS	R	MT	S	MS	7	Some Sk, CT, Sl Irr
Snowden	4,5	T	N	R	R	MD	MD	4	Ugly
St. Johns (AF828-5)	4,5	W	RS	R-O	MT	MS	MS-MD	5	Irr, Transl.
Sunrise	2,3	Bu	SN	R-O	MT	S	MS	7	OK
Superior	2,3	Bu	SN	R-O	SF	MD	MD	6	OK
Yukon Gold	2,3	Y	RS	R-O	MT	S	MS	7	Sk, Sc, PE, YF
AF1438-4	2,3	Bu	SN	R	MY	S	MS	7	Sl Irr, Sk
AF1470-17	4,5	Bu	RS	R-O	MT	S	S	7	Some JER
AF1475-16	6,7	W	RS	O-R	MT	MS	MS	7	Sl Irr, Kn
AF1606-2	6,7	W	RS	O-R	MT	MS	MS	7	Sl Irr, H Sp
AF1609-1	6,7	W	RS	O-R	MT	MS	MS	5	Variable
AF1612-8	6,7	W	RS	R	R	MS	MS	7	Small
AF875-15	2,3	Bu	SN	R-O	MT	S	MD	6	Some Sk
B0169-56	10,11	T	MR	L-O	R	S	S	7	Sm, OK
B0493-8	10,11	T	LR	L	SF	S	MS	6	Irr, Transl.
B0564-8	4,5	Bu	SN	R	R	MS	MS	7	Sm, Sk cracking
B0564-9	4,5	T	SN	R	R	S	S	7	Tan color
B0587-9	6,7	Bu	SN	O-R	SF	MS	MS	6	Good Sk Set
B0811-13	8,9	MR-DR	N	R	R	MS-MD	MS	4	Irr, Kn, Rg, YF
B0903-2	8,9	MPu	RS-S	O-R	MT	MS	MS	5	Irr, Sl Sk
B1022-8	6,7	Bu	SN	O-R	MT	MS	MS	5	Irr
B9922-11	10,11	B	HR	O	SIF	S	S	5	Irr
F80054	2,3	Y	SN	R-O	R	S	MS	7	Small
L8-4 (NY104)	6,7	Bu	RS	O-R	SF	MS	MS	5	Irr, PE, Vasc. D
L8-18 (NY105)	6,7	Bu	SN	O	MT	MS	MS	6	Sl Irr
L18-9 (NY106)	6,7	W	RS	R-O	R	MS	MS	7	Small
ND2417-6	4,5	Bu	SN	R	R	MS	MS	5	Irr, H Sp, Pear
ND2471-8	4,5	W	RS	R	R	MS	MS	6	Sc, Sl Irr
NDO2438-7R	8,9	DR	S	R-O	R	S	S	7	Sk
NDO2469-1R	8,9	MR-DR	S	R-O	R	S	S	7	Sk, some Vasc. D
NDO2686-6R	8,9	DR	RS	O-R	MT	MS	MS	4	Irr, Sk
NY101	6,7	Bu	N	R-O	R	MS	MS	5	Irr, CT, Rg, YF
NY103	6,7	Bu	SN	O-R	MT	S	MS	6	Irr, JER
NY84	4,5	Bu	SN	R-O	MT	S	MS	7	OK
NY87	2,3,4,5,6,7	Bu	SN	O-R	MT	MD-MS	MD	7	Some Sk, Sl Irr
NY97	8,9	MR	RS-SN	L-O	R	MS	MS	4	Irr, some Sk
NY99	6,7	Bu	SN	O	SF	S	S	7	OK
NYE11-45	4,5,6,7	W	Rs	O-R	MT	MS-S	MS	7	Some rot, Sm
NYE55-44	2,3	Bu	SN	R-O	MT	S	MS	7	Some Sk, OK
NYM252-1	8,9	DPu	S	L-O	R	S	S	4	Irr, PuF
NYN40-2	8,9	LR	RS-S	L-O	R	MS	MS	5	Irr, Kn, Transl., PiF

COLOR: B=brown, Bu=buff, Pi=pink, Pu=purple, R=red, T=tan, W=white. Modifiers: L=light, M=medium, D=dark. TEXTURE: N=netted, R=russet, S=smooth. Modifiers: H=heavy, M=moderate, P=partial, R=Relatively, S=Slightly. SHAPE: L=long, O=oblong, R=round. EYE DEPTH: D=deep, M=moderate, S=shallow. TUBER DEPTH: MT=medium thick, R=round, SF=slightly flattened. COMMENTS: L=prominent lenticels, PE=pinkeye, Irr=irregular, JER=Jelly end rot, Kn=knobs, CT=chain tubers, Rg=Rough, Sc=scab, Sk=skinned, Sl=slightly, Sm=small, Sp=sprouts, St=stolons, Transl.=translucent end, Vasc. D=vascular discoloration, F=flesh, Pi=pink, Pu=purple, Y=Yellow, W=white

Long Island Table 2. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of early white-skinned clones grown at Riverhead, N.Y. - 1994.

early wine-skinned clones grown at Kivimäki, N. F. 1954.														
Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Size Distribution				Specific ¹ Gravity	
		cwt/A	percentage of standard	< 2"	2 to 2.5"	2.5 to 3.25"	3.25" 4"	> 4"	2 to 4 in.		4 in.			
									2 to 4 in.	4 in.				
Season-118 days														
Superior	242	215	100	11	40	47	2	0	89	49	67			
Monona	350	304	142	13	44	40	2	0	87	43	58			
Portage	357	300	140	16	55	28	1	0	84	29	68			
Sunrise	359	326	152	9	41	48	1	0	91	50	64			
Yukon Gold	321	291	136	9	30	58	3	0	91	61	70			
AF1438-4	242	182	85	25	58	18	0	0	75	18	60			
AF875-15	302	264	123	13	46	40	1	0	87	41	71			
F80054	158	86	40	46	52	2	0	0	54	2	88			
NY87	344	314	146	9	41	47	4	0	91	50	67			
NYE55-44	195	162	76	17	62	21	0	0	83	21	67			
Waller-Duncan														
LSD (0.05)	(41)	(35)									(3)			

Planted on 4/21/94, fertilizer rate was 100-200-200 lbs/A plus 60 lbs N/A sidedressed, harvested on 8/17/94.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 3. Maturity, tuber shape, and internal and external defects of early white-skinned clones grown at Riverhead, N.Y. - 1994.

Clone	Maturity ¹ on 8/09/94	Tuber Data ¹		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow Brown Internal Necrosis				
									heart	center	Sl.	Mod. Sev.	
Season-118 days													
Superior	3	R-O	6	2	0	2	0	0	0	0	0	0	0
Monona	5	O-R	6	5	0	4	1	0	0	0	18	13	15
Portage	5	R	7	5	1	2	1	1 (Sp,CT)	0	0	3	5	0
Sunrise	4	R-O	7	1	1	1	0	0	0	0	0	0	0
Yukon Gold	5	R-O	7	3	1	1	0	2 (Sk)	0	0	25	10	0
AF1438-4	4	R	7	2	0	1	0	0	0	0	3	5	0
AF875-15	5	R-O	6	5	1	3	1	0	0	0	0	0	0
F80054	4	R-O	7	2	1	1	0	0	0	0	23	25	0
NY87	5	O-R	7	0	0	0	0	0	0	3	0	0	0
NYE55-44	3	R-O	7	0	0	0	0	0	0	0	3	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 4. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of NE107 white-skinned clones grown at Riverhead, N.Y. - 1994.

NE10/ white-skinned clones grown at Kivimäki, N. I. - 1958.													
Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)						Size Distribution			Specific ¹ Gravity
		cwt/A	percentage of standard	< 2"	2 to		2.5 to 3.25 to		4"	> 4"	2 to 4 in.	2.5 to 4 in.	
					2.5"	3.25"	3.25"	4"					
Season-146 days													
Katahdin	333	278	100	17	34	44	5	0		83	49		57
Allegany	320	283	102	12	23	55	10	0		88	65		70
Atlantic	402	358	129	11	32	49	7	0		89	57		79
Castile	334	252	91	24	49	24	3	0		76	27		63
Chipeta	339	277	100	18	19	52	11	0		82	63		60
Kennebec	383	252	91	34	39	25	1	0		66	27		60
Snowden	375	320	115	15	54	30	1	0		85	31		74
St. Johns	459	365	131	21	18	51	11	0		79	61		61
AF1470-17	310	237	85	24	55	21	0	0		76	21		57
B0564-8	259	203	73	22	60	18	0	0		78	18		70
B0564-9	275	231	83	16	51	33	0	0		84	33		67
ND2417-6	299	214	77	29	53	17	1	0		71	18		65
ND2471-8	280	241	87	14	53	33	0	0		86	33		73
NY84	306	255	92	17	46	36	1	0		83	37		57
NY87	344	303	109	12	42	45	2	0		88	47		64
NYE11-45	409	355	128	13	46	40	1	0		87	41		57
Waller-Duncan													
LSD (0.05)	(50)	(45)											(2)

Planted on 4/20/94, fertilizer rate was 100-200-200 lbs/A plus 60 lbs N/A sidedressed, vine killed on 9/13/94, harvested was 9/22/94.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 5. Maturity, tuber shape, and internal and external defects of NE107 white-skinned varieties grown at Riverhead, N.Y. - 1994.

Clone	Maturity ¹		Tuber Data ¹		Tuber Defects (%)					Percentage				
	on 9/01/94	Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow heart	Brown center	Internal Necrosis			
											Sl.	Mod.	Sev.	
Season-146 days														
Katahdin	3	R-O	6	8	3	2	1	2	0	0	0	5	0	0
Allegany	3	R-O	6	5	1	4	0	1	0	0	0	3	0	0
Atlantic	3	R-O	5	4	1	2	1	1	0	0	0	28	18	20
Castile	3	O	6	13	1	9	1	2	0	0	0	8	0	0
Chipeta	4	R-O	4	11	2	3	0	6 (Rg)	5	0	48	8	5	0
Kennebec	2	O	4	22	2	10	0	11 (L,PE,Kn)	0	0	3	0	0	0
Snowden	3	R	4	2	0	1	0	1	0	0	0	15	10	0
St. Johns	4	R-O	5	16	4	6	2	3	0	0	0	0	0	0
AF1470-17	3	R	7	5	0	3	0	1	3	5	10	3	0	0
B0564-8	2	R	7	3	0	1	0	2	0	0	0	0	0	0
B0564-9	2	R	7	1	0	1	0	0	0	0	0	0	0	0
ND2417-6	3	R	5	9	1	6	1	2	0	0	0	0	0	0
ND2471-8	2	R	6	4	0	1	0	3	0	0	0	0	0	0
NY84	2	R-O	7	4	0	0	2	2	0	0	3	0	0	0
NY87	3	O-R	7	4	0	1	1	2	3	0	3	0	0	0
NYE11-45	3	O-R	7	3	1	0	1	1	0	0	3	0	0	0

¹ - See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 6. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of white-skinned clones from Northeast Potato Breeding Programs grown at Riverhead, N.Y. - 1994.

Clone	Total	Marketable Yield		Size Distribution (%)						Size Distribution			Specific ¹ Gravity	
	Yield cwt/A	cwt/A	percentage of standard	< 2"	2 to			4"	> 4"	2 to				
					2.5"	3.25"	3.25 to			4 in.	4 in.			
Season-146 days														
Katahdin	400	313	100	22	33	42	4	0		78	46		58	
Allegany	412	362	116	12	18	57	13	0		88	70		71	
Norwis	471	435	139	8	14	60	18	0		92	78		58	
AF1475-16	363	318	102	14	20	57	9	0		86	67		66	
AF1606-2	265	226	72	16	47	37	0	0		84	37		65	
AF1609-1	448	376	120	17	31	45	7	0		83	52		62	
AF1612-8	384	299	96	22	59	19	0	0		78	19		59	
B0587-9	241	210	67	13	45	40	2	0		87	42		70	
B1022-8	361	309	99	13	11	52	23	1		86	74		62	
NY87	413	360	115	13	34	52	1	0		87	53		65	
NY99	370	314	101	15	44	40	1	0		85	41		68	
NY101	480	360	115	25	34	39	1	0		75	41		63	
NY103	395	332	106	16	28	50	5	0		84	56		61	
NY104 (L8-4)	382	262	84	31	42	22	4	0		69	27		68	
NY105 (L8-18)	380	323	103	15	31	49	5	0		85	54		66	
NY106 (L18-9)	184	145	46	21	66	13	0	0		79	13		63	
NYE11-45	364	291	93	20	53	26	1	0		80	26		57	
Waller-Duncan														
LSD (0.05)	(59)	(55)											(3)	

Planted on 4/20/94, fertilizer rate was 100-200-200 lbs/A plus 60 lbs N/A sidedressed, vine killed on 9/13/94, harvested was 9/22/94.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 7. Maturity, tuber shape, and internal and external defects of white-skinned clones from Northeast Potato Breeding Programs grown at Riverhead, N.Y. - 1994.

Clone	Maturity ¹ on 9/01/94	Tuber Data ¹		Tuber Defects (%)					Percentage			
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow Brown Internal Necrosis			
									heart	center	Sl. Mod. Sev.	
Season-146 days												
Katahdin	3	R-O	6	14	6	2	0	6 (St,PE)	0	3	8	0
Allegany	5	R-O	5	8	3	2	1	2	0	0	3	0
Norwis	4	R-O	5	5	1	1	3	1	3	0	15	3
AF1475-16	3	R-O	7	9	1	5	0	2	0	0	13	0
AF1606-2	2	O-R	7	6	0	5	0	1	0	0	0	0
AF1609-1	4	O-R	6	10	1	7	0	2	0	0	20	8
AF1612-8	3	R	7	7	2	2	0	3	0	0	0	0
B0587-9	2	O-R	6	4	0	3	0	1	3	0	0	3
B1022-8	3	O-R	5	11	2	3	5	2	8	0	10	60
NY87	3	O-R	6	6	1	1	3	1	0	0	5	0
NY99	3	O	7	7	2	2	0	3	0	0	23	13
NY101	3	R-O	5	16	3	6	1	6 (Rg,PE)	0	0	28	3
NY103	3	O-R	6	11	2	1	1	8 (JER,PE)	3	0	5	0
NY104 (L8-4)	2	O-R	5	16	2	2	0	13 (PE)	0	3	3	0
NY105 (L8-18)	3	O	6	9	2	3	0	4	0	3	3	0
NY106 (L18-9)	2	R-O	7	2	0	2	0	0	0	0	0	0
NYE11-45	3	R	7	5	0	2	1	2	5	0	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 8. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of red-/purple-skinned clones grown at Riverhead, N.Y. - 1994.

red-/purple-skinned clones grown at Riverhead, N.Y. - 1994.													
Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)						Size Distribution		Specific ¹ Gravity	
		cwt/A	percentage of standard	<2"	2 to 2.5"		2.5 to 3.25"		>4"	2 to 4 in.	4 in. to 2.5 in.		
					2 to 2.5"	2.5 to 3.25"	3.25 to 4"	4 in. to 2.5 in.					
Season-146 days													
Chieftain	402	360	100	11	47	42	0	0	0	89	42	59	
Norland	242	184	51	24	61	15	0	0	0	76	15	57	
B0811-13	270	211	59	22	44	32	1	0	0	78	34	60	
B0903-2	433	285	79	34	27	38	0	0	0	66	38	63	
NDO2438-7	292	252	70	14	30	54	2	0	0	86	57	59	
NDO2469-1R	307	182	51	41	43	16	0	0	0	59	16	57	
NDO2686-6R	283	241	67	15	59	26	0	0	0	85	26	57	
NY97	329	164	46	50	35	14	0	0	0	50	15	57	
NYM252-1	355	234	65	34	47	19	0	0	0	66	19	58	
NYN40-2	373	146	41	61	37	2	0	0	0	39	2	65	
Waller-Duncan													
LSD (0.05)	(57)	(56)										(3)	

Planted on 4/20/94, fertilizer rate was 100-200-200 lbs/A plus 60 lbs N/A sidedressed, vine killed on 9/13/94, harvested on 9/22/94.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 9. Maturity, tuber shape, and internal and external defects of red-/purple-skinned varieties grown at Riverhead, N.Y. - 1994.

Clone	Maturity ¹ on 9/01/94	Tuber Data ¹		Tuber Defects (%)					Percentage				
		Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Other ²	Hollow Brown Internal Necrosis				
									heart	center	Sl. Mod. Sev.		
Season-146 days													
Chieftain	2	O-R	6	2	0	1	0	0	0	0	33	8	3
Norland	2	R	6	5	0	1	0	3 (H Sp)	0	0	0	0	0
B0811-13	2	R	4	7	0	7	0	0	0	0	0	0	0
B0903-2	2	O-R	5	26	1	22	1	1	3	0	0	0	0
NDO2438-7	2	R-O	7	9	0	2	6	1	0	0	5	0	0
NDO2469-1R	3	O-R	4	20	0	11	8	0	0	0	0	3	0
NDO2686-6R	2	R-O	7	3	0	2	0	0	0	0	3	0	0
NY97	2	L-O	4	37	0	35	1	0	0	0	0	0	0
NYM252-1	4	L-O	5	22	0	18	3	0	0	8	0	0	0
NYN40-2	2	L-O	4	33	1	31	0	1	0	0	0	0	0

¹ -See rating system outlined in the text.

² -Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 10. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of russet-skinned clones grown at Riverhead, N.Y. - 1994.

of russet-skinned clones grown at Riverhead, N. Y. - 1994.													
Clone	Total	Marketable Yield		Size Distribution (%)						Size Distribution			Specific ¹ Gravity
	Yield cwt/A	cwt/A	percentage of standard	< 4	4 to 8		8 to 12		12 to 16 oz.	16 oz.		16 oz.	
					4 to 8	8 to 12	12 to 16 oz.	16 oz.					
Season-146 days													
Coastal Russet	322	174	100	46	52	2	0	0	0	54	2	57	
BelRus	230	97	56	58	38	4	0	0	0	42	4	72	
Goldrush	259	77	44	70	28	2	1	1	1	30	2	60	
B0169-56	387	169	97	57	40	3	0	0	0	43	3	69	
B0493-8	344	247	142	27	51	19	2	1	1	72	21	59	
B9922-11	334	256	147	23	53	20	3	1	1	77	23	75	

Waller-Duncan												(2)	

Planted on 4/20/94, fertilizer rate on 100-200-200 lbs/A plus 60 lbs N/A sidedressed, vine killed on 9/13/94, harvested on 9/22/94.

¹ -1.0 is excluded from specific gravity readings.

Long Island Table 11. Maturity, tuber shape, and internal and external defects of russet-skinned clones grown at Riverhead, N.Y. - 1994.

Clone	Maturity on 9/01/94	Tuber Data ¹		Tuber Defects (%)						Percentage		
		Shape	Appear- ance	Total	Sun-		Mis- shapen	Growth cracks	Other	Hollow Brown Internal Necrosis		
					burn	center				heart	center	Sl. Mod. Sev.
Season-146 days												
Coastal Russet	2	L	7	6	1	5	0	0	0	0	13	3
BelRus	1	L	6	6	2	4	0	0	0	0	7	0
Goldrush	2	L	4	30	0	27	3	0	0	0	0	0
B0169-56	1	L-O	7	17	1	15	0	1	10	0	0	0
B0493-8	2	L	6	7	1	4	1	0	0	0	3	0
B9922-11	2	O	5	5	0	1	2	1	23	0	0	0

¹ -See rating system outlined in the text.

Long Island Table 12. Yield and quality of early selection lines and recently named varieties in a non-replicated observation trial. 1994

Clone	Yield (cwt/A)	Total	2-4"	standard	2 to 4"	Defects	% Spec. ¹	% Internal Defects				HH	BC	Sl.	M	S	Color	Text.	Shape	Eye Depth		Appear- ance	Comments ²
								Internal Necrosis												Depth	Lateral		
								%	%	%	%												
Season 145 days																							
White-skinned lines																							
Katahdin	451	407	100		3	63	5	5	15	5	0	W	S-RS	R-O	SF	S	MS-MD	7	SI Irr, St				
Superior	340	287	71		7	68	0	0	0	0	0	Bu	SN	R-O	SF	MS-MD	MD	5	Irr, PE				
AF1656-4	307	252	62		16	64	0	0	0	0	0	W	RS	O-R	MT	S	S	7	SI Irr				
AF1658-5	486	399	98		15	77	10	0	0	0	0	Bu	SN	R-O	MT	S	S	6	Some VD, Sp				
AF1668-60	396	375	92		1	66	0	0	0	0	0	T	SN	O	SF	S	MD	5	Irr, Sk				
AF1675-1	404	295	73		15	73	0	0	30	10	0	Bw	RS	O	MT	S	MS	5	Irr, Kn				
B0851-2	365	323	79		5	65	0	0	50	10	10	W	RS	R	SF	MS	MS	6	OK				
B0874-1	364	336	83		1	72	0	0	0	0	0	W	S	R-O	R	MS	MS	6	SI Irr, St				
B0933-14	361	325	80		3	75	0	0	0	0	0	Bu	SN	R	R	S	MS	6	Some CT, VD				
B0977-7	530	382	94		23	57	0	10	10	0	0	Bu	SN	R-O	MT	S	MS	5	Irr, CT, Sc				
B1032-3	550	482	118		2	79	10	0	10	0	0	Bu	SN	R	SF	S	MD	5	Irr				
B1106-2	446	383	94		12	64	0	20	0	0	0	Bu	SN	R-O	MT	S	MD	5	Sk, Irr				
B1137-6	321	305	75		0	69	0	0	0	0	0	Bu	SN	R	R	S	MS	6	SI Irr, Sk set, Y				
B1150-5	490	435	107		2	61	0	0	0	0	0	Bw	SN	R	SF	MS	MS	6	Some H Sp.				
B1169-4	352	311	77		8	64	0	0	0	0	0	W	S	O	MT	S	MS	6	SI Irr, SI Y				
NYM1-2	440	403	99		0	78	0	0	0	0	0	Br	N	R	R	S	MD	6	Rd Rus				
NYM14-6	391	358	88		4	74	0	0	0	0	0	T	N	R	R	S	S	7	Rd Rus				
NYM14-1	427	343	84		7	76	0	0	10	0	0	By	SN	O-R	MT	MS	MS	7					
NYM19-3	399	368	91		3	64	0	0	0	10	0	W	RS	R-O	R	S	S	8	Nice				
NYM28-3	593	509	125		9	76	0	0	0	0	0	W	S	O-R	SF	MD	MD	5	Irr				
NYM32-7	456	390	96		7	72	10	0	0	0	0	By	N	R	R	MS	MD	4					
White-skinned lines with poor yield and/or appearance																							
AF1657-3	B0564-8					B0972-17			B1128-11			B1191-2			NYM39-4								
AF1668-13	B0850-8					B0996-1			B1132-11			NYM14-11											
AF1668-58	B0856-4					B1016-3			B1134-7			NYM19-4											
AF1668-62	B0919-5SG					B1029-6			B1137-1			NYM28-2											

Long Island Table 12 continued. Yield and quality of early selection lines and recently named varieties in a non-replicated observation trial, 1994

Clone	Yield (cwt/A)		standard	2 to 4	Defects	%	Spec.	% Internal Defects					HH	BC	SI.	M	S	Color	Text.	Shape	Depth	Eye		Appear- ance	Comments
	Total	2-4						Internal Necrosis																	
								Apical	Lateral	ance															
Red-skinned lines																									
Chieftain	482	404	100	9	62	0	0	0	0	0	LR	RS-S	O-R	SF-MT	MS	MS	5	Irr, Sk,CT							
B0852-5	430	315	78	13	64	0	0	0	0	0	Pu	S	O	MT	S	S	5	Sk, Irr							
B0852-7	320	299	95	0	74	0	0	0	0	0	DPu	S	R	R	MS	MS	6	Bright, SI Sk							
B0967-11	588	518	128	7	74	0	0	0	0	0	DPu	S	O	MT	S	S	6	SI Sk, SI Irr							
B0984-1	510	347	86	28	73	40	0	0	0	0	DR	RS	O-R	MT	MD	MS	4	Irr, Sk							
B1102-6	357	289	71	9	60	0	0	0	0	0	DR	SN	O-R	MT	MS	MS	7	Sk set, 3 Vasc D							
B1145-3	295	221	55	11	58	0	0	0	0	0	MR	S	O-R	MT	MS	MS	7	OK, Rh Rus							
B1177-1	296	253	63	2	58	0	0	0	0	0	MR	SN	R-O	MT	S	S	6	SI Irr, N							
NYN38-1	393	352	87	4	61	0	0	0	0	0	MR	SN	O	MT	MS	S	6	3 Vasc D							
NYN38-4	450	374	93	5	57	0	0	0	0	0	Pi	SN	O-R	MT	MS	MS	5	H Sp, Sk							
NYN40-1	522	342	85	17	74	10	0	0	0	0	DPu	RS	O	MT	MS	MS	6	Irr, Pu							
NYN51-1	324	262	65	9	57	0	0	0	0	0	MR	RS	O-R	MT	MS	MS	6	SI irr, SI Sk							
Red-skinned lines with poor yield and/or appearance																									
B1145-2, NYN38-5, NYN51-2																									
Russet-skinned lines																									
Coastal Russet	323	262	100	5	59	0	0	0	15	10	T	LR	L	R	S	S	6	SI Irr							
B1004-8	481	405	155	12	76	0	0	0	30	0	T	PR	O-L	R	S	S	7	Some Sc							
Russet-skinned lines with poor yield and/or appearance																									
AF1639-5, AF1643-10, AF1644-1, B0455-27, B1162-19																									

¹ -1.0 is excluded from specific gravity readings.

² -See footnotes in Table 1.

Planted on 4/21/94, fertilizer rate was 100-200-200/lb N/A sidedressed, vine killed on 9/13/94, harvested on 9/19/94. Superior and Chicfain were replicated two times. Coastal Russet and all other entries were not replicated.

Long Island Table 13. Yield, marketable yield, percentage of yield by grade, size distribution, specific gravity, maturity and total defects of Allegany and Superior potatoes grown under early season moisture stress and non-stress conditions at Riverhead, N.Y. - 1994.

Nitrogen Rate (lbs/A)	Total		Marketable Yield		Size Distribution (%)					Size Distribution		Maturity ²	
	Yield cwt/A	Yield cwt/A	percentage of standard	<2"	2 to 2.5"	2.5 to 3.25"	3.25 to 4"	>4"	2 to 4 in.	2.5 to 4 in.	Specific ¹ Gravity	on 8/31/94	% Total Tuber Defects
Season-153 days													
Non-stressed Allegany													
75	383	358	93	7	20	62	12	0	93	74	71	4	3
150	402	386	100	4	14	62	21	0	96	82	74	6	2
225	343	276	71	20	19	48	13	0	80	61	76	6	14
Stressed Allegany													
75	326	257	67	21	30	44	5	0	79	49	72	6	13
150	387	297	77	23	22	50	5	0	77	55	70	7	18
225	364	273	71	25	21	47	7	0	75	54	70	8	18
Non-stressed Superior													
75	389	364	99	6	32	60	1	0	94	61	65	1	2
150	409	366	100	10	33	55	2	0	90	56	65	2	5
225	466	380	104	18	27	53	2	0	82	55	66	3	14
Stressed Superior													
75	214	140	38	35	54	11	0	0	65	11	71	1	18
150	219	158	43	28	51	21	0	0	72	21	67	2	14
225	180	142	39	21	61	18	0	0	79	18	69	2	8

Planted on 4/21, 4/22/94, all plots received 200 lbs/A of P₂O₅ and K₂O and 50 lbs/A of MgO, vine killed on 9/13/94, harvested on 9/30/94.

¹ -1.0 is excluded from specific gravity readings.

² -See rating system outlined in the text.

Non-stress treatments were irrigated on: 6/10, 6/20, 6/21, 6/29, 7/9.

The entire experiment was irrigated on: 7/1, 7/7, 7/15, 7/21, 7/29, 8/5, 8/13.

Long Island Table 14. Yield, marketable yield, percentage of yield by grade, size distribution, specific gravity, and internal defects of Allegany at four potash rates at Riverhead, N.Y. - 1994.

Potash Rate (lbs/A)	Total		Marketable Yield		Size Distribution (%)					Size Distribution		Percentage	
	Yield cwt/A		cwt/A	percentage of standard	< 2"	2 to 2.5"	2.5 to 3.25"	4"	> 4"	2 to 4 in.	4 in. to 4 in.	Specific Gravity	Hollow heart
Season-144 days													
0	374		347	96	7	22	61	10	0	93	71	74	5
150	387		361	100	7	20	61	12	0	93	74	72	0
300	321		289	80	10	29	51	9	0	90	60	70	0
600	252		227	63	10	32	51	8	0	90	59	65	0
<i>Waller-Duncan</i>													
<i>LSD (0.05)</i>													
(55) (62) (2)													

Planted on 4/21/94 , fertilizer rate was 100-200-200 lbs/A plus 60 lbs N/A sidedressed, vine killed on 9/13/94 , harvested on 9/30/94.

¹ -1.0 is excluded from specific gravity readings.

New York

R.L. Plaisted, B.B. Brodie, D.E. Halseth, S.S. Slack, W.M. Tingey

The crossing program produced 164,000 seeds in 19 crosses with variety potential, all segregating for resistance to *Globodera rostochiensis*. There were 27 crosses segregating for resistance to *G. pallida* and *G. rostochiensis*. Fourteen crosses have resistance to *Pratylenchus penetrans* and 68 crosses express glandular trichomes. A total of 274,000 seeds were produced.

Seeds produced in 1992 (S's) were transplanted to six inch pots and four tubers saved from each. There were 8,888 round white clones, 1,555 red clones, and 12,538 trichome clones. In the red and trichome progenies, we selected for skin color.

The 20,500 four hill seedling population (Q's) produced 1,657 round white selections and 558 trichome selections. The round white clones have been subsequently screened for chip color after 45°F storage, and for resistance to *G. rostochiensis*.

The 1,095 second year observation and seed plots were planted as 24 hill plots. From these, 144 were saved for further variety selection and 101 for a second season of trichome evaluation.

Intermediate Generations

In the third generation, 85 clones were grown in yield trials, the scab plot, and a 144 hill seed plot. From these, 21 were saved. Nine clones were saved from 15 in the fourth year of trials.

Advanced Generations

A summary of the performance of the most advanced clones is as follows:

NY84 = D146-11 = Rosa x NY66 (1980). Midseason tablestock. High yielding and scab resistant. Yield at Ellis Hollow and Mt. Pleasant over five seasons in cwt/A: NY84 = 447, Monona = 353, Atlantic = 433. In five seasons at Riverhead, NY84 yielded an average of 115% of Katahdin and Norwis yielded 141% of Katahdin. In 1994, at five upstate sites, NY84 yielded 120% of Atlantic. Bright skin. Nice shape, slightly flat. Early emerging, attractive vigorous vine. Early

sizing. In eight seasons, yields on August 1 were 90% of Superior. Few pickouts and internal defects. Specific gravity like Monona. Good cooking qualities, slight yellowish cast when boiled. Slight sloughing. Tuber dormancy two weeks longer than Katahdin or Atlantic. Resistant to golden nematode and very good scab resistance, nearly that of Superior. 37 acres of foundation seed in 1994. 175 cwt produced at Uihlein Farm.

NYE11-45 = Rosa x Q155-3 (1981). Midseason to late season chipstock and tablestock. High yields. Yield at Ellis Hollow and Mt. Pleasant over six seasons in cwt/A: E11-45 = 458, Monona = 336, Atlantic = 422. 120% of Monona in six years in Steuben County and 110% of Monona in five years in Wyoming County. In five seasons at Riverhead, NYE11-45 yielded an average of 117% of Katahdin and Norwis yielded 141% of Katahdin. In 1994 at seven upstate sites, NYE11-45 yielded 120% of Atlantic. Bright white skin. Attractive shape, somewhat flattened. Generally few internal defects and pickouts. Specific gravity and dormancy like Monona. Acceptable boiling qualities. Chip color equal to Atlantic from the field and equal to or better than Monona from storage at 45°. Resistant to the golden nematode. Scab resistance like Monona. 20 acres of foundation seed in 1994. 99 cwt of Uihlein seed produced.

NYE55-35 = Allegany x Atlantic (1981). Mid-late season chipstock with high specific gravity and very good scab resistance. Yield of US. #1 in six years on Mt. Pleasant and Ellis Hollow in cwt/A = E55-35 = 379, Monona = 329, Atlantic = 382. In 1994, at five upstate sites E55-35 yielded 101% of Atlantic and equal to Snowden. Tends to have about 40% in the 1-7/8" to 2-1/2" size. 10" spacing seems to give best yield and size. Irrigation improves yield without much effect on tuber size. Generally free of pickouts and internal defects, but may be subject to net necrosis. Attractive tuber shape. Netted skin, free of blemishes. Specific gravity equal to Atlantic and Snowden. Chip color similar to Monona from 48° and 45° storage, some possibility of reconditioning from 40°. Good early vine growth, medium vigor at end of season, but better than Monona. Resistant to the golden nematode and very resistant to scab, comparable to Superior. 2 acres of foundation seed in 1994 in New York State. 105 cwt produced at Uihlein Farm.

NYE55-44 = Allegany x Atlantic (1981). Early to midseason table and chipstock. Very rapid

emergence and early set. In seven trials in Ellis Hollow during the past six years, E55-44 has produced 274 cwt/A in early August and Superior 269 cwt/A. At full season on Mt. Pleasant and Ellis Hollow for six seasons, E55-44 has produced 359 cwt/A compared to 336 for Monona and 422 for Atlantic. In 1994 at nine sites, E55-44 had a US #1 marketable yield 97% that of Atlantic. In mid July, for two years E55-44 has yielded 12% more than Superior. By mid August the yields are alike. The yielding ability of E55-44 appears to be susceptible to drought and heat stress. Attractive tuber shape. Skin texture like Superior. Large tuber size. Yields of E55-44 at 7" to 10" spacing are alike. Small percentage of pickouts and internal defects. Specific gravity is higher than Superior. Excellent chip color from the field under a range of environments, from 48° and 45° storage and from 40° with reconditioning. Good boiling and baking properties. Tuber dormancy like Katahdin or Atlantic. Exceptionally rapid early growth, but vines tend to decline in mid August. May be sensitive to air pollution. Scab reaction like Monona. Resistant to golden nematode and possibly to powdery scab. 28 acres of foundation seed in 1994. 308 cwt produced at Uihlein Farm.

NY87 = F24-12 = Monona x Allegany (1982). Mid-late season chip and tablestock. High yields, early sizing, and large tuber size. Yield at Mt. Pleasant and Ellis Hollow over six seasons in cwt/A: NY87 = 440, Monona = 329, Atlantic = 379. In four seasons at Riverhead, NY87 yielded an average of 114% of Katahdin and Norwis yielded 134% of Katahdin. In 1994 at seven upstate sites, NY87 yielded 130% of Atlantic. Early sizing, 90% of yield of Superior in early August. Very few pickouts. Some hollow heart in large tubers, but less than Atlantic and Snowden. Good tuber shape and bright skin. Appearance better at narrower spacing. Specific gravity better than Monona. Good chip color from the field and 48° and 45° storage. Two weeks longer dormancy than Katahdin and Atlantic. Nice vine type with large leaflets. Good boiling quality. Resistant to golden nematode and scab resistance like Monona. 7 acres of foundation seed in 1994 and 102 cwt produced at Uihlein Farm.

NY95 = J84-16 = Allegany x Atlantic (1985). Midseason chipstock. Yield was 97% of Kanona and 87% of Atlantic in three seasons on Mt. Pleasant and Ellis Hollow; 74% of Kanona and 88% of Atlantic in three seasons in Steuben and Wyoming counties.

Tuber size smaller than Kanona and Atlantic, larger than Snowden. Low percentage of internal and external defects. Very vigorous early growth. Nice large vines. Chip color is better than Monona at 45°. Specific gravity is .002 greater than Atlantic (4 trials, 5 years). Long tuber dormancy. Scab resistance better than Atlantic. Resistant to golden nematode. 19 cwt produced at Uihlein Farm.

NY97 = L33-1 = FD191-1 x F133-1 (1987). Midseason, dark red-skinned tablestock. Yield of US #1's has been 78% of Chieftain in 13 trials over four years. Few internal defects. Oblong shape. May be irregular. As scab resistant as Chieftain. Low specific gravity. Resistant to golden nematode. 14 cwt produced at Uihlein Farm.

NY101 = K7-1 = Steuben x Norwis (1986). Mid-late season tablestock. Pale yellow flesh. Scurfy skin. Exceptionally high yields of large round tubers. Yield at Mt. Pleasant and Ellis Hollow for four seasons in eight trials: (cwt/A) NY101 = 446, Atlantic = 408. At five sites in 1994, NY101 yielded 153% of Atlantic. Early sizing. Large tuber size. Very round. Very few pickouts. A small percentage of internal defects upstate (less than Atlantic, like Monona), but internal necrosis on Long Island. Scab resistance like Superior. Specific gravity like Katahdin. Very nice vine growth and appearance. Resistant to golden nematode. 32 cwt produced at Uihlein Farm.

NY102 = K9-29 = Steuben x Kanona (1986). Midseason chipstock. Yields 97% of Kanona in six trials in 1993 and 94% of Kanona in five trials in 1994. Small-medium tuber size. Very few pickouts. Bright skin. Scab resistance between Monona and Superior. Specific gravity like Atlantic. Very good chip color from 45° storage. The 1993 crop had average chip scores from 45° storage of 1.3 for NY102, 2.6 for Snowden, and 3.7 for Kanona. The Agron readings were 59 for NY102, 56 for Snowden, and 56 for Kanona. Tuber dormancy two weeks longer than Monona. Good vine growth. Resistant to golden nematode. 4 cwt produced at Uihlein Farm.

NY103 = K88-24 = Steuben x (Neotbr x tbr) (1986). Midseason table and chipstock. Yield of US #1 relative to Atlantic was 91% at five upstate sites in 1993 and was 118% at seven upstate sites in 1994. In 1994 at Riverhead, NY103 yielded 106% of Katahdin and 91% of Allegany. Outstanding tuber appearance. Very bright, blemish-free skin. Round

shape. Medium sized tubers. Upstate almost free of pickouts and internal defects. Scab resistance like Monona. Tuber dormancy six weeks longer than Katahdin and Monona. Nice vine type. Specific gravity .011 less than Atlantic (14 trials, 2 years). Chip color like Monona. In 1994 after 45° storage the score for NY103 was 4.1 compared with 4.2 for Monona. The Agtron for NY103 was 54 compared with 55 for Monona. Resistant to golden nematode, PVX and PVY.

NY105 = L8-18 = Steuben x Q155-3 (1987). Midseason chipstock and tablestock. Yield of US #1 at Mt. Pleasant, Ellis Hollow, and Freeville for two years was 92% of Atlantic. Good yields at Cato in 1993 and 1994 and Fulton in 1994. Yield like Katahdin at Riverhead. Specific gravity is .010 less than Atlantic. Chip color like Kanona. Tubers are bright and somewhat long. Large tuber size. Scab resistance like Monona. Resistant to golden nematode.

North Carolina

W. W. Collins and R. Schiavone

Introduction

Potato variety trials were conducted at four locations in eastern North Carolina with three of them on commercial farming operations and the remainder at the Tidewater Experimental Station in Washington County. A randomized complete block design consisting of four reps was used for all trials except the unreplicated trial which had one plot only. Plots contained 28 seedpieces at 9 inches within row spacing except the russet trial which had a 12 inch spacing. Cultural and pest control practices were as recommended for the region. The growing conditions for the season could be described as very good with adequate soil moisture throughout the season and normal temperatures. Specific gravity was determined by the weight-in-air/weight-in-water method. Chip color was provided by Mr. Steve Molnar of Wise Foods.

Results

Yields from most trials could be considered good with the exception of the McCotter farm trial which were severely depressed due to tuber breakdown prior to harvest. Chipping varieties that preformed well in all locations were Snowden, FL1533, FL1625 and AF875-15. AF875-15 also looks very promising as a early yielding variety. St Johns out yielded Atlantic in all four locations but had lower specific gravity and marginal chip color. AF1060-2 yielded well and had good tuber appearance making it a good tablestock candidate. Fontenot preformed well as a red variety as did B0811-13. The russet Goldrush had good yields and appearance as did W1005rus, B9922-11 and AF1552-5rus.

NORTH CAROLINA Table 1. Potato Variety Trial, Bright Farm, Pasquotank Co. Planted 3-17-94 Harvested 7-12-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	3 Rot	4 Vine Maturity
FL 1533	462	452	144	8	1.069	4	0	0	0	7
AF1060-2	467	432	138	6	1.063	5	2	0	0	7
Snowden	449	431	138	7	1.076	3	0	0	0	8
St Johns	446	424	135	7	1.060	6	0	0	0	9
AF 1569-2	427	402	128	9	1.066	6	0	0	0	5
FL 1625	398	369	118	6	1.067	3	1	0	0	8
AF 875-15	395	366	117	7	1.073	3	3	0	0	5
FL 1839	382	356	114	7	1.069	3	1	0	0	6
Fontenot	375	336	107	7	1.070	8	0	0	0	5
Atlantic(Std)	338	313	100	9	1.075	5	12	1	0	7
AF 1424-7	328	306	98	7	1.074	3	0	0	0	4
AF 1433-4	331	305	97	7	1.069	3	2	0	0	4
ND2224-5R	312	291	93	9	1.063	8	0	0	0	1
Red LaSoda	304	283	90	6	1.064	8	0	0	0	5
AF 1569-3	297	278	89	8	1.068	7	0	0	0	5
Superior	303	273	87	8	1.065	6	0	0	0	4
AC Parmigan	328	247	79	6	1.063	8	0	0	0	6
B1237-N1	252	237	76	9	1.073	4	0	0	0	5
NC042-2	234	214	68	7	1.065	5	0	0	0	8
NC012-19	221	187	60	7	1.074	-	0	0	0	7
NC031-37	185	153	49	6	1.067	-	0	0	0	2
NC045-13	145	135	43	8	1.074	-	1	0	0	7
NC031-66	147	131	42	8	1.073	-	0	0	0	4
NC046-5	129	117	37	6	1.065	-	0	0	0	6
Waller-Duncan										
LSD (k=100)	100	96								
Mean	319	293								

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2-Chip color supplied by Wise Food 7-14-94. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 2. Potato Variety Trial, Cooper Farm, Tyrell Co. Planted 3-15-94 Harvested 7-13-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearanc	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	3 Rot	4 Vine Maturity
AF1060-2	520	501	144	8	1.070	5	5	1	0	7
FL1533	420	399	115	6	1.073	3	0	0	0	7
BO564-8	408	394	113	8	1.077	5	0	0	0	7
St Johns	377	365	105	7	1.065	4	0	0	0	8
FL1625	369	348	100	7	1.077	4	2	0	0	9
Atlantic(Std)	366	348	100	8	1.080	3	11	22	0	8
BO257-12	380	346	100	7	1.079	3	0	0	0	7
AF1565-12	345	332	96	8	1.061	4	2	0	0	5
AF1433-4	331	322	93	7	1.070	3	3	2	0	7
AF875-15	336	319	92	4	1.082	1	2	0	0	6
Snowden	322	313	90	8	1.080	3	0	1	0	7
AC Ptmigan	355	296	85	7	1.067	6	0	1	0	6
BO564-9	340	286	82	8	1.077	3	1	0	0	7
BO613-2	325	282	81	8	1.072	3	2	0	0	7
Fontenot	307	270	78	6	1.073	6	0	0	0	6
Superior	291	269	77	7	1.071	5	1	0	1	6
FL1839	279	269	77	6	1.074	3	0	12	0	7
B1148-N8	269	259	75	9	1.065	-	0	0	0	6
NC012-18	285	259	74	5	1.081	-	15	0	0	8
BO587-9	287	252	72	6	1.074	6	7	5	0	6
NC012-19	256	239	69	8	1.078	-	12	2	0	8
BO172-22	271	230	66	5	1.078	3	4	0	0	7
B1098-N5	139	137	40	8	1.075	-	8	0	0	9
B1152-N7	66	63	18	8	1.073	-	0	0	0	8
Waller-Duncan										
LSD (k=100)	79	82								
Mean	318	296								

1- Tuber appearance: 1=very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7-14-94. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4-Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 3. Potato Variety Trial, McCotter Farm, Pamlico Co. Planted 3-15-94 Harvested 6-27-94.

Clone	Total Yield CWT/A	Mtable Yield CWT/A	Mtable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	3 Rot	4 Vine Maturity
FL1625	220	193	132	8	1.085	3	0	0	0	5
St Johns	213	186	127	5	1.072	6	0	0	0	4
B0613-2	245	171	116	5	1.075	6	0	0	0	2
Atlantic(Std)	159	147	100	8	1.085	4	0	0	0	3
Superior	166	145	99	7	1.075	4	1	0	0	1
Snowden	185	145	98	5	1.083	3	0	0	0	4
Fontenot	151	140	95	6	1.072	4	0	0	0	2
FL1533	159	135	92	8	1.080	5	0	0	0	2
B0564-8	138	127	86	8	1.077	7	0	1	0	1
AF875-15	153	124	84	6	1.083	3	0	0	0	2
B0564-9	145	123	84	7	1.082	8	0	0	0	2
FL1839	115	99	67	7	1.081	5	2	0	0	2
AC Parmigan	104	86	59	8	1.074	9	0	0	0	1
AF1060-2	103	84	57	7	1.077	7	0	0	0	2
AF1475-16	98	83	57	5	1.078	7	0	0	0	1
B0178-34	94	79	54	6	1.082	5	0	0	0	2
B0174-16	114	77	52	6	1.085	6	0	0	0	2
B0257-12	113	68	47	6	1.079	3	0	0	0	1
B1094-N3	62	52	35	6	1.083	-	0	0	0	3
B1165-N3	60	51	35	7	1.086	-	0	0	0	2
NC012-18	71	48	33	6	1.084	4	1	0	0	2
B1152-N7	50	45	31	5	1.080	-	0	0	0	1
NC012-19	56	38	26	6	1.077	3	0	0	0	1
NC031-5	41	34	23	7	-	-	0	0	0	1
Waller-Duncan										
LSD (k=100)	45	49								
Mean	126	103								

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2-Chip color supplied by Wise Food 7-5-94. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 4. Early Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-21-94 Harvested 6-20-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearanc	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	3 Rot	4 Vine Maturity
Norchip	229	216	102	8	1.079	3	0	0	0	7
Atlantic(Std)	221	213	100	7	1.080	3	2	2	0	7
AF875-15	229	213	100	8	1.081	5	2	0	0	7
Kennebec	212	207	97	8	1.070	5	1	0	0	8
Superior	198	192	90	5	1.070	3	1	0	0	4
F80054	148	135	63	4	1.093	5	2	1	0	5
AF1424-6	183	177	83	5	1.076	3	8	1	0	5
AF1331-2	165	159	75	6	1.071	6	0	0	0	5
Waller-Duncan										
LSD (k=100)	56	58								
Mean	198	189								

1 -Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 6-20-94. 1=very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 5. Red Variety Trial at Tidewater Research Station, Plymouth, N. C. Planted 3-21-94 Harvested 7-6-94.

Clone	Total		Mktable		1		Specific Gravity	2		2		3	
	Yield CWT/A	Yield CWT/A	Yield CWT/A	Yield %Std	Tuber Appearance	Yield %Std		Hollow Heart	Heat Necrosis	Rot	Vine Maturity		
B0811-13	298	275	275	147	6	147	1.066	0	0	0	5		
Fontenot	269	253	253	135	6	135	1.069	1	0	0	5		
B0616-1	228	209	209	112	7	112	1.062	0	0	0	4		
Dk Red Norland	211	194	194	104	8	104	1.068	0	0	0	1		
Red LaSoda(Std)	215	187	187	100	4	100	1.064	3	0	0	4		
B0984-1	204	185	185	99	7	99	1.072	0	9	0	5		
ND2224-5R	195	173	173	92	9	92	1.065	0	2	0	1		
B0800-12	199	173	173	92	8	92	1.065	1	4	1	3		
Waller-Duncan													
LSD (k=100)	25	24	24										
Mean	227	206	206										

1 -Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 40 (10/rep) with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 6. Round White Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-21-94 Harvested 7-6-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	3 Rot	4 Vine Maturity
B0851-2	336	308	166	8	1.069	7	3	3	0	4
B0717-1	296	271	146	6	1.068	3	3	0	0	6
B0763-15	275	261	141	7	-	3	3	0	0	6
B0684-5	284	260	140	8	1.068	6	6	0	0	5
B0687-14	278	246	133	7	1.074	3	2	0	0	5
B0176-24	268	241	130	7	1.069	-	14	0	0	7
B0587-9	259	235	127	8	1.069	-	10	3	0	3
B0585-5	289	229	123	5	1.073	-	12	0	0	6
B0257-9	244	222	120	6	1.071	5	8	1	0	5
B0178-34	275	220	118	7	1.081	-	16	5	0	6
B0174-16	261	218	117	6	1.077	4	1	2	0	6
B0933-14	244	217	117	7	1.071	6	2	0	0	6
Superior	231	216	116	9	1.070	-	0	4	0	4
B0766-3	251	207	111	3	-	-	11	0	0	5
Atlantic	221	186	100	8	1.071	4	7	10	0	6
B0892-7	219	184	99	4	1.073	4	9	1	0	4
B0874-1	171	154	83	6	1.071	-	9	5	0	4
Waller-Duncan										
LSD (k=100)	48	43								
Mean	264	232								

1 - Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7-12-94. 1=very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 7. Russet Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-21-94 Harvested 7-21-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Hollow Heart	2 Heat Necrosis	2 Rot	3 Vine Maturity
Goldrush	152	142	172	9	1.061	0	0	0	5
W1005RUS	158	121	146	6	1.051	0	0	1	7
B9922-11	131	114	138	8	1.068	1	1	0	6
AF1552-5RUS	128	112	135	7	1.064	0	0	0	7
AF1481-4	118	104	126	9	1.063	0	0	0	6
Belrus	92	87	105	7	1.072	1	7	0	6
AF1643-10RUS	88	83	100	7	1.064	1	0	0	4
Russet Burbank(Std)	139	83	100	1	1.057	0	16	0	8
B0493-8	91	81	98	7	1.062	0	2	0	6
Eide Russet	82	73	89	7	1.056	0	0	0	5
Waller-Duncan									
LSD (k=100)	51	56							
Mean	118	100							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 40 (10/rep) with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 8. NE107 Potato Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-21-94 Harvested 7-6-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Chip Color	3 Hollow Heart	3 Heat Necrosis	3 Rot	4 Vine Maturity
NY84	329	307	125	7	1.062	4	1	0	0	6
Kennebec	335	284	115	8	1.069	5	3	3	0	7
B0564-9	297	277	113	8	1.075	4	0	1	0	6
MN12823	362	277	113	4	1.068	6	24	1	0	8
St Johns	315	268	109	7	1.065	4	12	2	0	7
ND2417-6	312	268	109	7	1.071	6	0	7	0	5
AF1060-2	295	261	106	8	1.070	7	0	0	0	6
Chipeta	308	255	104	6	1.065	6	1	3	0	8
Atlantic(Std)	282	246	100	7	1.077	4	9	16	0	6
B0635-6	265	242	98	7	1.075	3	0	4	0	5
B0405-4	264	241	98	7	1.081	6	2	20	0	7
AF1470-17	307	237	97	7	1.062	7	0	4	0	4
NC012-18	296	228	93	6	1.071	3	14	2	0	5
B0172-22	262	226	92	8	1.077	3	15	0	0	6
ND2471-8	282	225	91	6	1.079	3	5	0	0	6
B0613-2	255	223	91	7	1.071	6	2	1	0	5
B0257-12	261	216	88	6	1.071	4	1	2	0	6
Snowden	240	211	86	8	1.070	3	1	2	0	5
B0564-8	233	210	85	9	1.073	3	0	0	0	4
NY87	226	206	84	8	1.072	5	4	0	0	5
AF1433-4	239	202	82	7	1.071	5	1	0	0	5
Spartan Pearl	264	197	80	5	1.067	3	8	0	0	5
NYE55-44	208	191	78	8	1.076	2	0	0	0	4
Katadin	233	188	76	8	1.067	5	0	1	0	6
Waller-Duncan										
LSD (k=100)	67	82								
Mean	278	237								

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Chip color supplied by Wise Food 7-12-94. 1= very light, 5= acceptable, 9= very dark.

3- Number of tubers out of 40 (10/rep) with internal disorder.

4- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH CAROLINA Table 9. Unreplicated Potato Variety Trial, Tidewater Research Station, Plymouth, N. C. Planted 3-21-94 Harvested 7-6-94.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Hollow Heart	2 Heat Necrosis	2 Rot	3 Vine Maturity
B1102-6(R)	202	145	70	7	1.059	0	0	0	3
B1110-11	261	253	123	8	1.076	1	0	0	6
B1121-6	216	195	94	7	1.075	0	0	0	3
B1128-11	145	130	63	6	1.071	0	2	0	2
B1132-11	257	225	109	7	1.067	1	0	0	2
B1137-2	252	217	106	6	1.065	0	0	0	5
B1137-6	236	194	94	9	1.072	0	0	0	2
B1145-3(R)	162	130	63	7	1.062	0	0	0	2
B1157-5	186	166	80	7	1.070	0	0	0	2
B1169-3	165	138	67	8	1.070	0	0	0	2
B1171-2	305	276	134	7	1.063	0	0	0	6
B1177-1(R)	173	147	71	7	1.056	0	0	0	2
B1189-7	151	110	53	5	1.068	1	0	0	3
B1191-2	229	198	96	7	1.063	0	0	0	1
B1150-5	364	326	158	6	1.056	0	0	0	6
B0972-17	204	164	80	6	1.065	0	0	0	4
B0977-7	310	249	121	5	1.060	7	2	0	5
B0984-3	261	240	116	7	1.066	0	2	0	2
B0985-3(R)	153	128	62	7	1.055	0	0	0	3
B0996-5	300	243	118	4	1.064	3	0	0	5
B1014-5	364	345	168	9	1.079	1	0	0	8
B1016-3	256	246	119	7	1.071	3	0	0	6
B1017-7	280	245	119	7	1.071	1	0	0	5
B1019-8	214	194	94	6	1.072	2	0	0	4
B1027-6	263	244	119	5	1.091	2	0	0	5
B1029-6	229	222	108	8	1.076	0	0	0	6
B1032-3	271	246	119	6	1.069	1	0	0	4
B1036-6	277	252	122	8	1.062	0	0	0	3
B1047-3	359	347	168	7	1.068	1	3	0	6
B0850-8	273	242	118	8	1.063	0	0	0	4
B0856-4	318	281	136	8	1.068	0	0	0	4
AF1609-1	187	141	69	4	1.065	0	1	0	7
AF1612-8	252	242	117	7	1.069	1	0	0	7

NORTH CAROLINA Table 9. Continued.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Hollow Heart	2 Heat Necrosis	2 Rot	3 Vine Maturity
AF1668-8	128	103	50	6	1.067	1	0	0	4
AF1668-13	277	248	120	6	1.069	3	0	0	4
AF1668-60	244	221	107	5	1.074	2	0	0	4
AF1668-62	223	191	93	7	1.061	1	0	0	2
AF1675-1	269	257	125	5	1.076	1	0	0	4
AF1452-28	234	204	99	5	1.069	3	0	0	3
AF1470-17	286	229	111	7	1.062	5	1	0	6
B1316-N2	125	117	57	7	1.064	4	0	0	6
B1320-N3	126	108	52	7	1.069	0	0	0	5
B1338-N1	199	181	88	8	1.068	0	0	0	9
B1347-N3	218	202	98	7	1.092	0	0	0	5
B1351-N7	153	113	55	6	1.076	2	0	0	5
B1354-N5	172	160	78	9	1.070	2	0	0	6
B1354-N14	171	156	76	7	1.072	0	0	0	7
B1354-N15	124	111	54	8	1.069	0	0	0	4
B1393-N4	176	160	78	7	1.071	0	0	0	6
B1394-N3	234	209	101	9	1.076	0	0	0	6
B1396-N4	163	143	70	9	1.078	0	0	0	6
B1396-N5	218	205	99	7	1.081	1	0	0	2
B1396-N6	185	166	81	6	1.067	0	0	0	6
B1397-N1	102	84	41	6	1.058	0	0	0	7
B1404-N7	116	84	41	7	1.073	1	0	0	4
B1414-N2	126	119	58	8	1.071	0	0	0	3
B1414-N4	133	113	55	6	1.061	3	0	0	7
B1414-N5	138	124	60	6	1.072	0	0	0	5
B1415-N8	143	123	60	8	1.076	0	5	0	6
NC246-2	234	214	104	7	1.083	0	0	0	7
NC258-1	192	181	88	7	1.073	1	1	0	4
NC259-4	236	210	102	8	1.072	1	0	0	4
NC259-5	253	233	113	6	1.072	0	1	0	5
NC260-6	226	212	103	7	1.076	0	0	0	4
NC265-4	160	155	75	6	1.073	1	0	0	6
NC266-3	195	189	92	7	1.068	0	0	0	6
NC269-3	196	181	88	5	1.069	0	0	0	6

NORTH CAROLINA Table 9. Continued.

Clone	Total Yield CWT/A	Mktable Yield CWT/A	Mktable Yield %Std	1 Tuber Appearance	Specific Gravity	2 Hollow Heart	2 Heat Necrosis	2 Rot	3 Vine Maturity
NC271-5	304	272	132	6	1.077	2	0	0	6
NC272-2	172	153	74	7	1.074	0	0	0	5
NC273-2	231	208	101	7	1.064	0	0	0	5
NC273-3	216	191	92	6	1.079	0	0	0	6
NC274-1	187	166	81	7	1.081	1	0	0	5
NC277-2	140	115	56	7	1.057	3	4	0	4
NC227-1	79	55	27	8	1.074	1	1	0	6
NC228-7	138	106	51	4	1.070	0	0	0	6
Snowden	259	238	115	5	1.070	0	1	0	5
Atlantic (Std)	268	206	100	8	1.074	2	3	0	6
Superior	238	210	102	7	1.070	0	1	0	4
Mean	222	197							

1-Tuber appearance: 1= very poor, 3= fair, 7= good, 9= excellent.

2- Number of tubers out of 10 with internal disorder.

3- Vine maturity: 1= very early, 5= medium, 9= very late.

NORTH DAKOTA POTATO BREEDING REPORT

Gary Secor, Bryce Farnsworth, Mike Schwalbe, Jim Lorenzen, Joe Sowokinos, Edna Holm, Neil Gudmestad, Duane Preston, Nicolay Balbyshev, Roald Lund.

Crossing and Seedling Production

A total of 470 potato crosses were made in the greenhouse during the winter and spring of 1994. During the summer in the greenhouse 61,398 seedlings were produced. At the Langdon Agriculture Experiment Station 60,945 seedlings were grown in the field and 1,385 were saved at harvest. Some of the seedling hills saved were for the Colorado potato beetle resistance and the Snack Food projects. The seedlings were planted on May 9 and 10 and harvested on September 19, 20 and 21. Rainfall was excessive during the season, resulting in some lower yields and loss of some plots due to flooding.

Advanced Selections

A total of 763 second year selections, which were the selections from the 1993 seedling crop, were planted at Grand Forks and Absaraka. The adaptation plot at Grand Forks was planted on May 17th and 114 second year selections were saved at harvest on September 6th and 7th. This includes material selected at Absaraka as well as Grand Forks. Of the older material, 266 selections were planted and 137 were saved at harvest. Third year and older selections were planted at the Casselton Seed Farm for clean seed stock production.

Secor is interim potato breeder, Plant Pathology; Farnsworth is senior research specialist, Schwalbe is research technician, Lorenzen is assistant professor; Lund is professor and Balbyshev is a visiting scientist in the Department of Plant Sciences, all at North Dakota State University. Cooperators are Sowokinos (Potato Biochemistry) University of MN; Holm (Sensory Evaluation- Food and Nutrition) NDSU; Gudmestad (Seed Potato Pathology - Plant Pathology) NDSU; Preston (Area Extension Potato Agent) NDSU/U of MN.

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Dean Peterson, Myron Thoreson, Galen Thompson, John Hempel and Paul Orr

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Promising Selections

No varieties were named. The most promising selections are ND1871-3R, ND2417-6, ND2471-8, ND3574-5R and ND2676-10. ND1871-3R is a high yielding red with good type and shape, which may be our next release. ND2417-6, ND2676-10 and ND2471-8 are from ND860-2 crosses and have cold chipping quality, good yield and total solids. ND3574-5R is a high yielding red selection that may have promise for southern states because of its short dormancy. ND3914-4 performed well, but has low gravity. ND2470-27 is a high yielding, high gravity selection which may have promise.

Cultivar and Selection Trials

Potato variety trials were planted at Grand Forks (Potato Research Farm) and Park River under dryland conditions and at Carrington, Oakes and Dawson under irrigated conditions. The irrigated trials were at the Carrington Research Center; at the farm of HRS Irrigation, Dawson; and at Vculek Farms, Oakes. Spacing, fertility, planting and harvest dates can be seen in Table 1. The Grand Forks and Park River trials had 36 entries. The trial at Grand Forks was lost due to flooding because of excessive rain. There were 40 entries at Carrington and Dawson and 36 entries at Oakes. These trials consisted of four replications of 25 hills in a randomized block design at each site. These consisted of standard varieties, advanced NDSU and Idaho selections, and newly released varieties. Trials to determine nitrogen requirements of new cultivars/advanced selections were planted at Oakes and at the Potato Research Farm (Thompson, ND). A nitrogen rate x timing study was conducted at an irrigated site near Oakes.

Dryland Trials

The results of dryland trials can be seen in Table 2. 1994 was generally a good year for potato production, and higher than normal yields were seen throughout the Red River Valley. However, wet weather and flooding prevailed during most of the season in the research plots and production was poor. The average U.S. No. 1 yield of all entries was 144 at Park River, down from previous years; the ND Variety Trial at Grand Forks was lost.

The top yielder in 1994 was A8337-2, with an overall average U.S. No. 1 yield of 204 cwt/acre. Other high yielders were Chieftain (197 cwt/acre), ND01496-1 (197 cwt/acre), Goldrush (193 cwt/acre), ND3574-5R (188 cwt/acre). Snowden yield was lower than in 1993.

Total solids were very high in 1994, averaging 22.1% at Park River. Looking at overall averages, 9 entries were as high or higher than Norchip in total solids. Norchip solids were 23.3%.

ND2471-8 and ND2417-6 continued to look good, and in commercial fields and processing trials, performed well. Fry color was excellent for both selections. ND2417-6 had no internal defects and ND2471-8 had some blackspot bruising. Both yield well under rainfed and irrigated conditions. We anticipate release of these two selections barring unforeseen problems. ND1871-3R continues to look good in trials throughout the United States and is also scheduled for release barring problems not yet noticed.

Additional New Selections

Entries in this trial are promising advanced selections that are new in the breeding program with potential to be new cultivars. They are compared to North Dakota standard varieties. In most cases, it is the first time they have been in trial. The results can be seen in Table 3. Out-state selections are Idaho selections received from Mark Martin, USDA-ARS, Prosser, WA; Agrico, Holland; Prairie Provinces Regional Breeding Program, Canada and Nickerson Seed, UK.

Irrigated Trials

The highest yielding red varieties in the irrigated variety trial were Red LaSoda, Red Pontiac, and Red Norland. NDSU selections ND1871-3R, ND2225-1R, and ND3530-13R performed well in the irrigated variety trials (Table 4). Advanced NDSU selections of red potatoes have an earlier maturity than Red Pontiac and Red LaSoda but have much better tuber type, skin color, and size distribution. Yield of these early maturing selections was nearly comparable to later maturing types, which allows flexibility of harvest date and fewer problems with immature tubers at harvest. ND1871-3R had the highest yield of the advanced selections at the high-yield site. Fontenot also had comparable yield and good tuber appearance and skin color. Fontenot and ND3530-13R have higher solids content than commercial red cultivars and may be suitable for specialty marketing purposes. Red LaSoda and Red Norland had significant levels of hollow heart in larger tubers, and Viking, Red Lasoda, and Red Norland had growth cracks and knobs. Viking, Red Pontiac, Red LaSoda, Red Norland, and LaRouge all had more than 55% of the yield in the

large-jumbo size classes, while ND2225-1R, Red Ruby, ND3530-13R, ND3196-5R, ND2050-1R, and ND3574-1R had 55% or more of the yield in the small-medium classes. ND1871-3R was intermediate with respect to tuber size.

ND3914-4, Norchip, and Atlantic had the highest yields among the chipping varieties/selections. ND2417-6 has slightly earlier maturity than Norchip. It has similar quality chips as ND860-2 when conditioned from cool storage. ND01496-1 has a high solids content, good yield and tuber distribution, and excellent chip quality. ND2470-27 also looked promising, while ND2481-8, ND2674-4, and ND2674-10 had acceptable yields and solids content. ND3914-4 had high yield but very low solids. Atlantic was the only variety/selection that showed hollow heart.

None of the russet selections were clearly superior, although some had higher yields or fewer defects than Russet Burbank (Table 5). Goldrush, which is much earlier maturing than Russet Burbank, had very stable yield across locations. Among the Idaho selections, A82119-3, AO8478-1, and AO84275-3 had good yield and solids, while A81286-1 had growth cracks and low yield. All of the Aberdeen selections are much later in maturity than NDSU cultivars. Ranger Russet, which has medium maturity, had good yield and solids and may be a good alternative to Shepody.

Management of new varieties under irrigation.

Optimum nitrogen rates in the irrigated trial with russet varieties appeared to be in the range of 150 to 225 lb/A total nitrogen (residual + applied). Although the plots with the highest rate (300 lb/A) had green foliage when the low-medium rates began to mature and die, there was no associated yield increase and quality was reduced at the higher rates. Specific gravity declined with each increment of nitrogen, and percent US#1 tubers declined above 150 lb/A for all varieties except Goldrush. Goldrush had the highest average yield (446 cwt/A) and the highest percent US#1 tubers (81%). Shepody had the greatest yield response to nitrogen (321 cwt/A to 527 cwt/A), and Russet Burbank the least response (402 cwt/A to 432 cwt/A). Shepody was the only variety with a yield increase at the highest nitrogen rate, but since it is usually intended for early harvest, and since solids were sharply lower and percent jumbo tubers higher at the high rate, the 300 lb/A rate would be too high for this variety as well. The management trials for advanced selections at the Potato Research Farm in Thompson were lost to flood damage.

Processing Trials - Chipping

In the winter and spring of 1994, chipping tests were conducted on cultivars and selections grown in the 1993

trials. The samples were chipped directly from 40°F storage and then after reconditioning at 65°F for two and four weeks. Agtron readings and percent chip yield were recorded. The results are shown in Table 6. Results showed that the best cold chippers were ND2676-10, ND2417-6, ND860-2, ND1995-1 and Snowden, but none were of acceptable color. The best five chippers after reconditioning for two weeks were Snowden, ND1995-1, ND860-2, ND2676-10 and ND2471-8. The best five chippers after reconditioning for four weeks were Snowden, ND1995-1, ND860-2, ND2676-10 and ND2471-8. The minimum acceptable color score is 40.

Processing Trials - French Fries and Flakes

Samples were tested for french fry and flake quality by the Food and Nutrition Department. Tests were done for color, flavor and texture. Taste tests included entries from breeding programs in Idaho, Minnesota and Texas, as well as North Dakota. The results of North Dakota entries can be seen in Table 7.

Resistance Testing

All selections in the trials are evaluated for scab and silver scurf at harvest, and susceptible selections were dropped. Advanced red-skinned selections were evaluated for resistance to silver scurf in replicated trials. None of the selections or standard varieties evaluated showed good resistance to silver scurf.

Advanced selections are evaluated annually for plant reaction to bacterial ring rot to determine symptoms of the disease. The trials in 1994 were affected by excessive rain and flooding, and no readings were possible.

Germplasm Enhancement

Clones from 23 *Solanum* spp were screened for cold chipping ability. Clones from 21 of these spp. which had light-colored chips were then tested for resistance to *Verticillium* and several useful individuals were identified with both desired characters. An additional screening project was initiated for P.I.'s from 10 spp. to identify further promising lines with both *Verticillium* resistance and cold chipping. Approximately 75 clones had extreme resistance to *Verticillium* and chip scores of 1 out of 38° F storage. The resistance of these clones is being confirmed in a field trial. The best individuals with resistance to *Verticillium* and cold-sweetening will be crossed to the best adapted cold-chipping clones selected from Idaho, Wisconsin, and Beltsville diploid/haploid material. An additional population consisting of good chipping clones derived from haploid x wild *Solanum* spp. (U. Wis.) was screened for

resistance to *Verticillium*.

Crosses between adapted diploids with genes for cold-chipping and *Verticillium* resistant/cold-chipping wild species were made (30 crosses), as were crosses among adapted cold-chipping diploids (14 crosses). Screening ND860-2 progeny identified several clones with acceptable chip scores directly from 38° F storage.

In a related project, DNA-based analysis was commenced to identify DNA markers linked to cold-chipping and *Verticillium* resistance traits in ND breeding lines. These are being verified on ND progeny which segregate for these traits. Developing closely-linked DNA markers for cold-chipping and *Verticillium* resistance will facilitate gene "stacking", reduce screening time, and allow the cloning of the respective genes.

Approximately 10,000 clones were screened for resistance to the Colorado Potato Beetle, and resistance of more advanced material was confirmed in advanced trials. Some of the beetle-resistant material has high vigor and yield, and acceptable size and shape for chipping varieties. These populations have both white and red individuals, some of which have exceptional skin color and resistance to skinning. This material is nearly at the stage where resistant selections have the potential to be varieties.

North Dakota Table 1. Spacing, Fertilizer, Soil Type, Planting and Harvest Dates of the 1994 North Dakota Potato Variety Trials.

Location	Spacing		Fertilizer	Soil Types	Planting Date	Harvest Date
	Row	Plant				
Park River	38"	12"	40-10-0 @ 200#/A	Glyndon silt loam	5/19	9/27
Grand Forks	38"	12"	22-22-13 @ 300#/A	Bearden clay loam	5/16	9/20
Carrington	38"	12"	180# N, 50# P	Silt loam	5/6	9/26
Oakes	38"	12"	200# N, 50# P, 100# K	Sandy loam	5/9	9/19
Dawson	38"	12"		Sandy loam	5/6	9/26

North Dakota Table 2. U.S. No. 1 Yield, Percent U.S. No 1 and Percent Total Solids of Potato Varieties and Selections Grown in Trial in North Dakota during 1994.

Variety or Selection	Cwt/Acre U.S. #1 Yield	Park River	
		% U.S. #1 Yield	% Total Solids
A8337-2	204	79	22.9
Chieftain	197	75	20.7
ND01496-1	197	71	23.7
Goldrush	193	76	22.0
ND3574-5R	188	78	19.2
ND2417-6	180	58	23.5
Red Pontiac	176	83	20.1
ND3914-4	174	80	19.4
Ranger	171	60	24.8
Norqueen Russet	171	74	21.4
ND2470-27	164	75	23.3
ND2050-1R	162	80	21.4
NorKing Russet	161	74	22.2
ND2471-8	159	72	24.8
AO8478-1	158	70	22.9
Red Norland	152	69	20.3
NDA2031-2	151	70	22.0
ND1871-3R	145	76	19.4
ND225-1R	145	78	20.3
Snowden	140	66	23.7
ND3530-13R	139	75	22.4
ND3595-17R	135	73	19.9
ND2676-10	134	62	22.7
Red Ruby	131	72	19.9
ND2676-4	127	64	22.7
Atlantic	126	62	24.8
Norchip	117	73	23.3
ND3196-1R	111	76	21.4
N8-14	108	68	22.0
Russet Norkotah	107	58	21.8
Shepody	106	59	23.7
A8390-3	100	70	23.1
A081775-3	99	61	22.4
A81478-1	83	84	23.3
ND860-2	82	66	21.4
Russet Burbank	78	53	22.4
Average	143.6	70.6	22.1

North Dakota Table 3.

Additional Advanced In-State and Out-State Selections and
Cultivars Trial Grown at Grand Forks, ND - 1994.

Selection or Cultivar	U.S. #1 Yield Cwt/A	Total Yield	% U.S. No. 1	% Total Solids
IN-STATE				
Red Pontiac	163	201	81	18.2
Norchip	160	186	86	20.9
Brodict	153	178	86	20.7
Sante	149	175	85	21.4
I426	140	163	86	19.2
Goldrush	138	173	80	19.9
Russet Norkotah	133	155	86	19.9
AND8673-1Russ	126	156	81	21.4
ND3647-6	108	143	76	22.4
Dundrod	106	127	84	19.7
Niska	104	116	90	20.7
Ptarmigan	100	125	80	19.0
Red Norland	96	123	78	18.0
ND3636-1	93	120	78	22.0
OUT-STATE				
A81286-1	195	222	88	19.0
Goldrush	139	187	74	20.1
A82119-3	136	177	77	20.3
AO84275-3	135	188	72	20.5
Shepody	126	170	74	21.2
A82622-52	122	180	68	23.1
A79180-10	103	137	75	22.2
Ranger	100	166	60	22.2
Russet Norkotah	98	131	75	20.5
Russet Burbank	94	120	78	19.2
A81473-2	92	131	70	18.4
AO80432-1	75	119	63	21.4

North Dakota Table 4. Performance of red and white potato varieties and selections under irrigation in North Dakota in 1994.

Variety or Selection	Carr	Yield (cwt/A)		Average Yield	Percent US #1	Percent Solids	Color ¹
		Dawson	Oakes				
Reds							
Fontenot	341.1	361.8	304.6	335.8	91.3	20.9	5.6
LaRouge	383.4	456.9	370.4	403.6	92.9	19.1	3.7
Red LaSoda	441.7	499.0	372.7	437.8	92.9	18.9	4.3
Red Norland	462.2	450.4	312.0	408.2	93.3	19.0	4.0
Red Pontiac	430.0	481.0	376.2	429.0	94.0	18.4	3.6
Red Ruby	336.5	313.2	289.2	313.0	89.1	18.6	5.7
Viking	296.5	410.2	321.0	342.6	90.2	19.2	3.6
ND1871-3R	345.2	401.1	290.9	345.7	93.5	18.2	5.7
ND2050-1R	293.6	167.6	258.3	239.8	89.2	17.4	5.6
ND2225-1R	280.3	291.9	332.9	301.7	83.8	18.0	4.5
ND3196-1R	335.3	269.7	-	288.2	92.9	19.6	6.6
ND3530-13R	351.7	386.4	330.2	356.1	90.6	20.6	5.3
ND3574-5R	338.5	396.3	268.2	334.3	94.1	17.6	5.9
Whites							
Atlantic	295.9	443.9	374.3	371.4	94.9	23.4	
Norchip	370.1	352.0	407.3	376.5	89.1	20.3	
Snowden	312.2	466.8	331.8	370.3	93.2	23.4	
ND860	185.7	255.2	182.4	207.8	85.7	20.0	
ND2417-6	353.0	366.2	304.5	341.2	88.8	20.5	
ND2470-27	306.6	445.9	346.1	366.2	92.1	20.8	
ND2471-8	277.5	341.2	281.6	300.1	94.5	22.5	
ND2676-4	282.2	397.3	298.6	326.0	87.0	20.1	
ND2676-10	284.5	364.7	304.0	317.7	93.6	21.1	
ND3636-1	249.0	290.6	-	255.5	82.3	21.0	
ND3914-4	362.4	428.3	-	380.9	92.1	17.6	
NDO1496-1	349.5	384.8	314.1	349.5	93.1	22.8	

¹Skin Color: 1=pink; 3=light red; 5=red; 7=dark red

North Dakota Table 5. Performance of russet and long white potato varieties and selections under irrigation in North Dakota in 1994.

Variety or Selection	Yield (cwt/A)			Average Yield	Percent US #1	Percent Solids
	Carr	Dawson	Oakes			
Russets/Long White						
Goldrush	334.7	364.7	342.6	347.3	84.1	19.2
Itasca	331.5	369.5	345.6	348.9	90.3	20.2
Norking Rs.	320.0	371.9	306.1	332.7	83.4	20.6
Norqueen Rs.	339.1	366.5	293.0	332.9	87.6	18.9
Ranger Rs.	315.4	476.7	302.3	364.8	83.2	22.4
Russ. Burbank	327.7	415.5	268.6	337.3	84.5	21.4
Russ. Norkotah	292.8	410.5	366.5	356.6	84.3	20.1
Shepody	292.5	344.7	283.6	306.9	78.2	20.3
A81286-1	252.4	352.9	222.6	276.0	83.7	21.0
A82119-3	366.5	421.2	350.0	379.2	86.9	20.3
A82622-52	266.5	335.5	308.7	303.6	87.0	23.6
A8390-3	315.6	434.0	-	355.0	85.1	21.1
A84180-8	310.1	399.6	311.8	340.5	87.8	20.6
AO84275-3	373.4	454.8	260.9	363.1	89.8	23.2
AO8478-1	303.0	454.5	374.4	377.3	83.6	21.2

North Dakota Table 6. 1994 Chip Tests (Agtron) and Percent Yield of Cultivars and Selections Grown in Trial During 1993.

Variety or Selection	First Chipping			Second Chipping			Third Chipping			% Chip Yield ⁸	
	40° Since Harvest			65° for Two Weeks			65° for Four Weeks				
	Grand Forks ¹	Park River ²	Ave.	Grand Forks ³	Park River ⁴	Ave.	Grand Forks ⁵	Park River ⁶	Ave.	Grand Forks	Park River
----Agtron Reading ⁷ ----											
Goldrush	14.5	13.0	13.8	25.0	26.5	25.8	32.5	27.0	29.8	33.3	27.8
Norchip	12.5	14.0	13.3	24.5	22.5	23.5	44.0	38.5	41.3	33.5	30.5
Norqueen Russet	15.0	19.5	17.3	23.5	27.5	25.5	31.0	28.5	29.8	31.5	29.0
Ranger	11.5	14.0	12.8	22.0	28.5	25.3	35.5	31.5	33.5	34.2	30.8
Russet Burbank	14.5	15.0	14.8	28.5	26.0	27.3	38.0	35.0	36.5	33.5	30.6
Russet Norkotah	13.0	13.0	13.0	25.0	31.5	28.3	28.0	28.5	28.3	32.9	29.5
Shepody	15.0	10.5	12.8	23.0	19.5	21.3	35.0	28.5	31.8	33.4	30.3
Snowden	16.0	22.0	19.0	56.0	58.0	57.0	64.0	57.0	60.5	35.8	32.1
ND860-2	36.5	26.0	22.0	42.5	50.5	46.5	53.0	45.0	49.0	32.5	29.5
ND1995-1	22.5	19.0	20.8	55.0	52.5	53.8	56.0	56.5	56.3	33.0	30.1
ND2417-6	28.0	22.0	25.0	37.0	31.5	34.3	49.0	46.0	47.5	34.4	31.4
ND2471-8	14.5	17.5	16.0	35.5	35.5	35.5	43.5	50.5	47.0	33.9	31.1
ND2676-10	26.5	25.0	25.8	33.5	40.0	36.8	53.0	41.0	47.0	34.3	30.0
A79180-10	12.5			17.5			24.5			34.7	
A8390-3	14.0			23.5			32.0			33.4	
A081775-3	9.0			21.0			33.5			32.6	
N8-14	27.0			37.0			52.5			33.3	
ND2382-15	16.0			23.0			41.5			33.4	
ND2676-4	24.0			40.0			52.0			32.9	
ND2818-7Russ	14.5			16.5			30.0			33.3	
ND2845-5	15.5			27.0			35.5			33.3	
ND3059-1Russ	16.5			17.5			25.0			31.6	
ND3166-2	23.0			34.0			44.5			33.4	

¹Chipped on 1/19/94

²Chipped on 1/18/94

³Chipped on 2/2/94

⁴Chipped on 1/31/94

⁵Chipped on 2/16/94

⁶Chipped on 2/14/94

⁷Agtron 0 - 90

0 = black; 90 = white;

40 minimum acceptable color

⁸Average of 6 Trials

North Dakota Table 7. Average Scores for French Fries and Flake Tests - 1994.

Cultivar or Selection	French Fries			Flakes		
	Color	Texture	Flavor	Color	Texture	Flavor
ND3787-2Russ	5.8	6.2	6.0			
ND4027-4Russ	5.9	6.1	5.7			
ND4093-4Russ	7.1	6.9	6.6			
ND2818-7Russ	8.2	7.3	6.7			
ND2973-10Russ	7.1	6.3	6.5			
ND3059-11Russ	4.8	6.5	5.8			
Norqueen Russet	4.8	6.6	5.7	7.2	6.6	6.4
Viking	5.9	6.1	5.9			
Goldrush	4.7	5.7	5.3	7.6	6.6	6.6
Russet Norkotah	5.3	6.1	5.3	7.6	6.9	6.6
AND8673-1Russ	5.8	6.1	6.3			
ND3455-10Russ	7.1	6.1	6.0			
A81286-1	6.3	6.7	5.6			
A81478-1	6.6	6.4	6.3			
AT9-772593-8Russ	8.3	7.0	6.7			
A8337-2	4.8	5.9	5.4			
A08478-1	7.3	6.7	6.4			
A084275-3	6.2	6.8	6.3			
A79180-10	3.8	5.0	4.4			
A81473-2	8.0	6.8	6.5			
A081775-3	6.8	6.5	6.7			
A82119-3	5.4	5.8	5.4			
A8390-3	6.2	6.1	5.5			
Ore-Ida (Check)	5.7	5.7	5.7			
R.B. Simplot (Check)	6.4	6.1	5.8			
R.B. NDSU (Check)	6.1	6.2	5.7	7.6	6.7	6.1
Norchip (Reference)				7.3	6.5	7.3
ND2676-4				7.9	6.6	6.5
ND2845-5				7.4	6.0	6.6
ND3166-2				7.7	6.3	6.2
ND2382-15				7.9	7.1	6.9
ND2417-6				7.4	6.8	7.1
ND2471-8				7.3	6.8	7.1
ND2676-10				7.9	6.2	7.1
ND860-2				6.7	6.3	6.3
Snowden				7.1	5.0	6.1
Rating Guide	7-9	Good				
	5-6	Fair, but acceptable				
	1-4	Poor, not acceptable				

OHIO

Richard Hassell, David Kelly, E.C. Wittmeyer, Elaine Grassbaugh, Mark Bennett and John Elliott

Ohio Agricultural Research and Development Center/OSU, Wooster and Columbus, OH

Introduction: Forty varieties and clones were evaluated in 1994 at the Ohio Agricultural Research and Development Center, Wooster, Ohio, as part of the NE 107 Regional Project (Breeding and Evaluation of Potato Clones for the Northeast).

Methods: The seed samples, when received, were stored under recommended conditions. Plots were planted May 18, 1994, with 30 seed pieces spaced 12 inches apart, in rows 36 inches apart. A randomized complete block design with four replications was used. Soil type was a Wooster silt loam (fine-loamy, mixed mesic typic Fragiuudalf) with a pH of 5.8 and a phosphorus level of 120 lbs. and a potassium level of 194 lbs., according to analytical procedures of the Research Extension Analytical Laboratory, the Ohio Agricultural Research and Development Center.

Fertilization consisted of 1200 lbs/A 10-20-20, one-half applied as broadcast application after plowing and disked in, and one-half applied in bands at planting. Herbicides used were Dual and Sencor. Other pesticides included Imidan, Thiodan, Guthion, Bravo, Monitor, Asana, and Dithane. Phorate-Thimet was applied at planting. Plots were mechanically harvested on September 22-23, 1994. Samples were taken at harvest for quality evaluations in the Pilot Plant, The Ohio State University. Specific gravity was determined using the potato hydrometer method. The potatoes from each replicate were graded October 24-25, when 10 tubers were taken at random from each replicate for hollow heart and internal necrosis ratings (Ohio Table 2).

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Weather Conditions: Rainfall during the growing season (May-September) was 14.44 inches, 4.37 inches below the long-term average for Wooster. Average temperatures for May and September were slightly below the long-term average for the area.

Results: Top-yielding entries (more than 290 cwt/A, U.S. No. 1) included BO493-8, Castile, BO257-12, Katahdin, BO172-22, St. Johns, and Coastal Chip. These seven entries produced U.S. No. 1 yields ranging from 291 cwt/A to 312 cwt/A, and the U.S. No. 1 percentage ranging from 83% to 96%.

Entries with specific gravity above 1.080 included F80054, NYE55-44, Snowden, Castile, AF10650-2, Yukon Gold, BO257-12, ND2471-8, NYE55-35, B0245-15, Atlantic, AF875-15, Mainechip, BO178-34, AF1331-2, Kennebec, BO172-22, NCO12-18, Russet Bakeking, A81473-2, B9792-157.

Hollow heart was present in 58% of the cultivars evaluated, much higher than 1993 when only 10 percent showed this problem. Cultivars with more than 5% hollow heart (on basis of examining 40 tubers) included NY87 (15%), B0245-15 (10%), Katahdin (5%), Mainechip (28%), AF1331-2 (8%), Superior (8%), and AF1481-4 (10%).

Ohio Table 1. Yield, marketable yield, percent of yield by grade size distribution and specific gravity for varieties grown at Wooster, Ohio - 1994. (Northeast)

Cultivar	Total Yield cwt/A	Size Distribution by Classes					Specific gravity
		Marketable Yield		% of Total Yield			
		U.S.#1 cwt/A	% STD	U.S.#1 (>1-7/8")	B size	Culls	
F80054	252	184	74	73	15	12	1.095
NYE11-45	272	226	80	83	4	13	1.067
ND2417-6	321	279	95	87	5	8	1.079
NYE55-44	235	219	69	93	5	2	1.088
BO564-8	296	260	87	88	11	1	1.073
BO493-8	325	312	96	96	1	3	1.078
AF1470-17	317	241	94	76	5	19	1.071
NY87	327	307	96	94	2	4	1.078
Snowden	281	253	83	90	10	0	1.089
Castile	337	300	99	89	2	9	1.083
AF1426-1	347	232	102	67	1	32	1.079
AF1060-2	296	252	87	85	6	9	1.082
Yukon Gold	282	262	83	93	1	6	1.087
BO257-12	337	310	99	92	2	6	1.088
ND2471-8	281	256	83	91	7	2	1.085
NYE55-35	302	263	89	87	13	0	1.088
B245-15	282	271	83	96	1	3	1.083
Atlantic	294	268	87	91	7	2	1.092
AF875-15	289	266	85	92	4	4	1.091
Chipeta	304	255	90	84	1	15	1.079
Katahdin Std	339	312	100	92	1	7	1.076
Mainechip	315	277	93	88	4	8	1.094
BO178-34	309	269	91	87	6	7	1.093
AF1331-2	333	263	98	79	4	17	1.089
Kennebec	338	223	100	66	4	30	1.082
Superior	307	267	91	87	6	7	1.077
AF1438-4	319	262	94	82	9	9	1.071
AF538-2	272	218	80	80	16	4	1.070
BO172-22	342	301	101	88	3	9	1.094
NC012-18	318	239	94	75	9	16	1.089
St. Johns	351	291	104	83	2	15	1.076
BO616-1	268	225	79	84	8	8	1.073
NY84	280	241	83	86	7	7	1.069
AF1481-4	295	233	87	79	7	14	1.079
AF1425-1	272	226	80	83	10	7	1.075
AF1438-1	275	239	81	87	4	9	1.071
Monona	287	258	85	90	3	7	1.070
Russet Bakeking	288	259	85	90	7	3	1.087
A81473-2	242	208	71	86	11	3	1.086
Coastal Chip	339	305	100	90	4	6	1.083

Ohio Table 2.

Tuber shape and appearance, hollow heart ratings, internal necrosis ratings and chip color for varieties grown at Wooster, Ohio - 1994. (Northeast)

Cultivar	Plant maturity	Tuber shape	Appearance ²	Hollow heart	Internal necrosis	Chip ² * color
F80054	5	3.00	4.75	0	0	2.0
NYE11-45	7	2.50	7.00	0	0	3.5
ND2417-6	6	2.00	6.50	0	0	4.5
NYE55-44	3	2.00	6.25	0	0	4.0
BO564-8	7	2.00	5.25	3	0	3.5
BO493-8	7	4.25	4.00	3	0	4.0
AF1470-17	7	3.00	2.75	0	0	3.0
NY87	5	2.75	5.75	15	0	2.5
Snowden	6	2.00	4.50	0	0	3.0
Castile	7	4.00	4.25	3	0	5.0
AF1426-1	5	3.00	3.25	3	0	4.0
AF1060-2	7	2.00	5.00	0	0	
Yukon Gold	5	2.25	6.00	3	0	5.0
B257-12	4	3.00	5.25	8	0	4.5
ND2471-8	7	2.00	5.50	5	0	3.0
NYE55-35	6	2.00	6.25	0	0	2.0
B245-15	7	4.00	6.25	10	0	1.5
Atlantic	6	2.50	5.75	0	0	1.5
AF875-15	4	2.50	5.00	5	0	4.0
Chipeta	9	3.00	5.00	8	0	
Katahdin (STD)	8	3.00	6.50	5	0	3.5
Mainechip	6	2.00	6.25	28	0	3.0
BO178-34	6	2.50	5.00	0	0	3.0
AF1331-2	7	2.50	7.25	8	0	2.0
Kennebec	7	3.00	5.00	3	0	3.0
Superior	3	3.00	5.00	8	0	3.5
AF1438-4	3	2.00	5.00	0	0	5.0
AF538-2	7	2.00	6.00	3	0	2.0
BO172-22	7	3.00	4.75	3	0	2.5
NC012-18	6	4.00	5.00	3	0	1.5
St. Johns	8	3.00	5.75	0	0	3.0
BO616-1	7	2.75	6.75	0	0	5.0
NY84	6	3.00	5.50	3	0	1.5
AF1481-4	6	7.75	7.00	10	0	4.0
AF1425-1	7	3.00	7.50	0	0	3.5
AF1438-1	6	3.00	7.50	0	0	3.5
Monona	7	3.00	5.25	0	0	4.0
Russet Bakeking	8	4.50	7.25	0	0	4.0
A81473-2	7	8.00	4.50	2.5	0	3.0
Coastal Chip	7	3.00	3.75	3	0	2.0

²See standard NE107 rating system, Maine (Porter et al.) Table 9.²PC/SFA standard

Ohio Table 3.

Plant stand, percent blister, Agtron readings, and additional tuber data for varieties grown at Wooster, Ohio - 1994. (Northeast)

Cultivar	Stand %	Plant Blister % ^z	Agtron E-5F	Tuber Data		
				skin texture	eye depth	skin color
F80054	97	40	36.6	6.25	5.00	7.00
NYE11-45	86	10	30.0	8.00	6.00	6.25
ND2417-6	84	30	21.7	6.75	6.75	5.25
NYE 55-44	82	10	19.9	5.00	7.75	5.00
BO564-8	92	20	31.8	5.5	6.00	5.25
BO493-8	79	10	21.1	3.75	7.50	4.00
AF1470-17	88	20	37.2	6.25	6.50	6.00
NY87	93	10	40.7	6.75	6.00	6.00
Snowden	95	10	34.2	5.00	4.50	5.00
Castile	90	70	17.0	6.00	6.25	6.00
AF1426-1	85	40	24.9	5.00	6.00	4.50
AF1060-2	92	10	22.9	6.00	6.00	6.00
Yukon Gold	80	50	16.2	6.00	7.00	5.50
BO257-12	88	20	18.6	6.00	6.00	5.50
ND2471-8	86	20	39.4	6.75	5.75	6.00
NYE55-35	88	20	33.4	5.50	5.75	6.00
BO245-15	92	10	46.8	6.00	5.75	5.00
Atlantic	89	10	48.4	5.00	6.50	5.00
AF875-15	93	20	22.7	6.00	5.75	5.75
Chipeta	93	0	34.4	5.00	5.75	5.00
Katahdin	88	50	34.4	6.50	6.00	6.00
Mainechip	89	30	31.9	5.25	6.50	5.25
BO178-34	88	20	36.9	5.50	6.00	5.25
AF1331-2	74	40	44.4	7.00	7.00	6.00
Kennebec	88	10	31.3	6.75	6.00	6.25
Superior	85	50	34.3	6.25	5.00	6.00
AF1438-4	85	20	12.0	6.00	6.00	5.00
AF538-2	85	10	43.6	5.00	6.50	6.00
BO172-22	90	0	43.0	6.75	6.25	6.00
NCO12-18	83	30	47.4	5.75	6.00	4.75
St. Johns	83	10	37.0	7.00	6.25	6.00
BO616-1	88	10	10.1	5.75	6.50	2.00
NY84	86	10	46.7	7.00	6.25	6.00
AF1481-4	83	50	17.9	3.75	6.25	4.00
AF1425-1	88	30	29.7	7.50	7.00	6.50
AF1438-1	83	20	26.8	7.00	7.00	7.00
Monona	98	10	24.4	6.50	5.50	6.00
Russet Bakeking	92	50	20.4	3.00	7.00	4.00
A81473-2	85	30	33.8	3.00	7.00	4.00
Coastal Chip	93	0	38.3	5.00	4.00	5.00

^zPercentage of chips that develop blisters greater than 20 mm in diameter during the frying process.

^ySee standard NE107 rating system., Maine (Porter et al.) Table 9.

OREGON

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Potato variety field trials were conducted by personnel in the Department of Crop and Soil Science at Corvallis and at branch experiment stations in Hermiston, Madras, Klamath Falls and Ontario. While only two trials are summarized in this report, results of dozens of others, some of which are situated in grower fields, are available from the authors.

The "Oregon Statewide Trial" is conducted by workers stationed at Madras, Hermiston, Klamath Falls and Ontario. Entries are replicated four times at each site. Individual plots are 25-foot single rows. Seedpiece and row spacing, cultural and pest control practices, and planting and harvest dates are based on local commercial preferences. Data presented in Table 1 are averages for the four sites.

Table 2 summarizes results of a chipping trial at Corvallis. Production inputs approximated local commercial practices. Diseases and insects were satisfactorily controlled by a combination of cultural practices and labelled agrichemicals. Unlike previous years, late blight was not an important factor in 1994 because of warm, dry weather.

Results of other Oregon trials are summarized under "Western Regional Potato Trials" elsewhere in this volume.

Oregon Statewide Trial (Table 1)

Twenty-five advanced selections were compared to named varieties at four eastern Oregon locations. All four sites are semi-arid with negligible precipitation, especially during the growing season. The Powell Butte and Klamath Falls sites are relatively cool and short-season because of the approximate 4,000 foot elevation. By contrast, Ontario and Hermiston are extremely long season with very high yield potential. Powell Butte and Klamath Falls growers produce primarily tablestock while the Ontario and Hermiston crops are used for frozen processing.

Seventeen of the entries will be discarded because of various yield and quality deficiencies (Table 1).

Survivors will be tested further in Oregon trials or advanced to the Tri-State and/or Western Regional Trial.

As usual, Century Russet (tested as A74212-1E) lead all entries in U.S. No. 1 yield. Century is currently being released by Oregon in cooperation with the ARS/USDA and five neighboring states. Century tubers will not process well because of relatively high sugar and low starch concentrations. Baking, boiling, frying and microwaving characteristics are good to excellent. Century is quite late in maturity and subject to mechanical injury if harvested prior to good skin set.

Other russets of interest include AO82611-7 and COO83008-1. COO83008-1, a russet-skinned Oregon selection from the Colorado State University breeding program is scheduled for release in 1996 by Oregon in cooperation with the ARS/USDA, Washington, Idaho, and Colorado. It has excellent potential for frozen processing. Specific gravity tends to be consistently higher and french fry color consistently lighter than Russet Burbank. COO83008-1 produces consistently higher U.S. No. 1 yields than Russet Burbank but total yields are often similar. It is relatively resistant to knobs, second growth and internal defects including hollow heart and sugar ends. COO83008-1 performs satisfactorily under a wide range of soil moisture conditions. Tubers tend to be slightly round and flattened compared to Russet Burbank in long season areas but long and very attractive in cool, short season areas. COO83008-1 apparently has good potential for fresh market use in high elevation areas throughout the west. It is highly resistant to some strains of late blight.

AO82611-7, an Oregon long-russet processing selection from the Aberdeen breeding program, has shown considerable promise for frozen processing. It is being considered for release by Oregon and cooperating western states. Tubers are almost as long as those of Russet Burbank but generally higher in specific gravity with better fry color. AO82611-7 generally produces considerably higher yields than Russet Burbank. AO82611-7 is more resistant to knobs and second growth than Russet Burbank but somewhat susceptible to pear-shapes and growth cracks.

NDO2904-7, an early-maturing Oregon selection, has shown good potential for fresh market throughout the western states. However, tubers were extremely high in glycoalkaloids in 1994 with levels in some fields exceeding 100 mg per gm. Consequently, this selection will be discarded despite excellent fresh market potential.

Other promising selections include AO87018-23, an early-maturing russet with satisfactory solids and fry color, AO87119-3, AO87277-6, AO89128-4 and AO89142-2. AO87277-6 appears to have good yield potential and fair to good characteristics for frozen processing.

The chipping selection AO85436-1 was discarded because of prominently folded bud ends and a tendency toward decay in storage.

Corvallis Chipping Trial (Table 2)

Several chipping entries showed promise. The highest yielding entry, ATX85404-8, also showed several problems, however. Tubers of this entry were quite susceptible to hollow heart and shrivelling and sprouting in storage. This clone may be a poor choice for prolonged storage without good sprout control but does have tremendous yield potential and good solids and chip color throughout the winter.

FL1815 was particularly interesting in that it had good solids and fry color from 50°F but also had bright yellow flesh. Tubers were round and attractive with shallow eyes. Sprouts from 40°F storage averaged only 0.5 inches in early May. FL1625 may be a good choice for growers interested in tablestock as a secondary market outlet.

FL1625 tubers tended to be slightly flat and oblong with thick, tan skins. Specific gravities were lower than desirable but fry colors were excellent compared to most other entries.

NDO1496-1 has been highly susceptible to shatter bruising in most Pacific Northwest locations. Tests are underway to determine whether the problem can be controlled. It appears, however, that NDO1496-1 may be discarded by Oregon.

Other promising entries include ND2417-6 (low gravity), ND2471-8, BC0894-2 (slightly oblong), Atlantic and Snowden. AC83306-1 apparently

matures relatively late for the Willamette Valley but has good yield potential and fry color. Tuber skins of this selection were severely feathered during harvest.

Several entries appeared to have promise for chipping from 40-45°F storage.

Oregon Table 1. Average Performance of 31 Potato Clones at Four Oregon Locations¹

Entry	Yield, CWT/A		US no. 1 Rank %	Oz/ Tuber	L/W ²	Spec. Grav.	Fry ³ Color	Percent ⁴			Comments
	Total	No.1						HH	BS	IBS	
Russet Burbank	586	323	30	55	6.8	1.9	34	2	3	5	Poor shape, uniformity
Lemhi Russet	581	514	8	88	9.4	1.6	37	13	19	0	
Shepody	499	355	28	71	10.3	1.7	32	3	3	1	Knobs, scab
Russet Norkotah	383	325	29	85	7.1	1.7	34	2	3	1	Good
Atlantic	514	457	18	89	7.8	1.0	46	5	3	4	
Century Russet	792	704	1	89	9.3	1.5	28	0	3	0	Uniform; med rus
A082611-7	573	431	23	75	6.8	1.8	41	1	7	0	Pears, cracks
C0083008-1	606	527	5	87	7.6	1.5	42	3	3	2	Smooth, blocky rus
ND02904-7	497	459	17	92	8.7	1.6	34	0	3	0	High GA, discard
A085165-1	603	510	9	85	8.0	1.6	31	3	6	0	Rough, pears
A084022-108	515	472	13	92	9.4	1.8	37	1	12	2	Long rus; okay
A085436-1	786	674	2	86	7.6	1.1	40	3	1	1	Chipper, discard
A087011-10	635	475	12	75	7.5	1.6	33	2	2	0	Discard
A087018-20	580	391	26	67	5.4	1.9	38	4	3	0	Discard
A087018-23	437	367	27	84	6.2	1.7	37	2	3	0	Early rus., nice
A087032-4	493	412	24	84	8.5	2.0	37	6	3	4	Discard
A087119-3	599	477	11	80	7.8	1.9	33	1	3	1	Long rus., okay
A087206-3	468	285	31	61	5.7	1.6	38	1	0	0	Discard
A087212-3	451	394	25	87	8.3	1.8	41	0	6	0	Discard
A087218-13	536	464	14	86	8.4	1.7	31	1	5	0	Discard
A087224-5	556	445	20	80	5.7	1.6	35	10	5	1	Discard
A087234-6	641	519	6	81	9.7	1.6	32	1	5	0	Discard
A087245-9	635	591	3	93	10.7	1.4	32	1	2	0	Discard
A087257-1	489	431	22	88	8.9	1.5	34	2	2	2	Discard
A087277-6	603	508	10	84	7.8	1.8	40	0	2	0	Fair rus., pty
A089113-1	516	435	21	84	7.8	1.7	38	14	1	0	Discard
A089128-4	631	459	16	73	7.1	2.0	49	0	2	0	Rus. Pty, knobs
A089142-2	610	537	4	88	8.9	1.7	35	0	2	0	Fair rus
A089142-6	610	515	7	84	7.4	1.7	41	8	1	2	Discard
C0089003-2	521	460	15	88	9.4	1.6	37	1	3	0	Discard
C0089065-2	535	452	19	84	7.8	1.6	38	11	4	1	Discard

¹ Averaged values for 4-replicate trials at Hermiston, Klamath Falls, Ontario and Powell Butte² Length divided by width³ Reflectance readings, high numbers signify light french fry color⁴ HH=hollow heart; BS=blackspot bruise; BC=brown center; IBS=internal brown spot

Oregon Table 2. Performance of Chipping Varieties at Corvallis, OR.

Entry	Yield, Cwt/A		Oz/ Tuber	Percent ¹			Spec. ²			Agtron Color ³				SL _{in} -2/13 ⁴	
	Total	No. 1		K	Gc	Gr	HH	VD	Grav.	10/14	12/13-40	12/13-50	2/13-40	40°F	50°F
FL1625	562	501	6.9	0.5	0.6	2.6	5.0	4.0	89	43	30	46	30	44	1.0
ND2417-6	576	473	5.0	0.3	0.4	3.2	1.0	0.0	77	44	32	45	32	43	1.9
FL1815	584	510	6.9	0.1	0.0	7.8	3.0	0.0	77	45	33	46	31	46	0.5
ND2008-2	471	394	5.1	0.5	0.3	2.1	2.0	0.0	68	43	33	44	34	45	6.8
ATX85404-8	881	747	5.7	0.4	0.1	4.4	14.0	1.0	83	44	30	45	35	43	15.5
ND2471-8	620	526	5.3	0.0	0.3	4.1	0.0	0.0	84	43	24	41	23	35	0.9
Epicure	607	483	4.9	0.5	0.3	4.4	4.0	3.0	73	38	18	36	18	35	5.5
BC0894-2	576	488	5.4	0.1	0.2	3.7	0.0	1.0	71	42	26	43	25	44	9.3
AC83306-1	652	536	7.1	0.5	4.0	5.0	7.0	7.0	80	41	27	43	26	42	5.8
Atlantic	622	547	5.9	0.1	0.5	3.9	2.0	0.0	89	43	23	42	21	44	6.0
Ptarmigan	617	447	8.3	4.3	3.6	6.8	3.0	8.0	67	39	13	34	14	35	7.3
ND01496-1	642	537	5.6	0.2	0.9	3.7	0.0	1.0	88	44	31	46	34	46	11.5
Snowden	671	590	5.3	0.1	0.0	3.0	0.0	0.0	90	44	27	43	28	44	3.9
Niska	498	402	6.2	0.7	1.6	5.8	4.0	3.0	76	44	22	48	21	47	4.8
LSD (0.05)	94	104	0.8	1.9	1.6	NS	3.6	1.0	0.5	2.8	4.9	2.8	4.2	4.3	2.1

¹ Percent of randomly-selected tubers showing knobs, growth cracks, greening, hollow heart or vascular discoloration.² Specific gravity, air/water method, 1.0 omitted.³ Agtron reflectance readings pre-storage on October 12 and from 40°F and 50°F.⁴ Average sprout length in inches from 40°F and 50°F storage on February 13.

Pennsylvania

B. J. Christ, M. W. Peck and D. M. Petrunak

Introduction

The potato evaluation trial was conducted at the Russell E. Larson Agricultural Center at Rock Springs, PA. This trial is part of an extensive and on-going project that evaluates promising clones for yield, and chip processing potential.

Materials and Methods

The trial was planted on June 1 in single row plots as a randomized complete block design with four replications. Plots were 10 feet in length with 36 inches between rows and 8 inches between seed pieces. Fertilizer, 900 lb of 10-10-10, N-P-K, was banded at planting. The plots were vine killed on September 16 and harvested on October 6.

Specific gravity was determined by the weight-in-air/weight-in water method. Tubers were held at ambient temperature until they were placed in storage. Samples were chipped four times throughout the winter. Four tubers from each clone were peeled, cut in half, and sliced. Eight slices from the center of each half were used for the chip sample and were fried at 365 F. The chip samples were rated on a 1-10 scale according to a modified snack food color chart.

Results

The first half of the season was hot and dry; however, the second half of the season was cool and wet. There was a low amount of late blight (<1%) by the end of the growing season which provided inoculum for tuber rot. There are numerous clones that had yield greater than Atlantic or Katahdin. However, there are only a few clones, NY 98, NYE11-45, B0892-7, B0564-8 and B0763-15 that had equivalent or lighter chip color than Atlantic or Norchip. Of the reds tested, N51-1 and NY97 had excellent yield and color. B0852-7 was the best purple skinned tested both for color and appearance. Russet Norkotah was the best russet for yield and appearance.

Acknowledgments

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Pennsylvania Table 1. Total and US #1 yield, percentage US #1, specific gravity, and chip color results from potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)			Specific Gravity	ChipColor			
	Total	US #1	%US #1		Dec ¹	Jan ²	Feb ³	Feb ⁴
Kennebec	572	450	79	1.077	6	-	-	-
Novachip	441	414	94	1.085	6	7	6	8
Norchip	441	413	90	1.082	5	7	6	7
Superior	396	369	93	1.077	8	7	7	-
Monona	387	354	91	1.075	6	6	6	6
Katahdin	384	351	91	1.066	-	-	-	-
Atlantic	383	342	89	1.089	6	6	6	7
Norwis	267	259	97	1.073	5	6	6	8
NY101 [§]	527	492	93	1.076	5	6	6	8
B1047-3	541	487	90	1.073	-	-	-	-
NY104	504	471	94	1.077	6	6	6	8
B1017-7	481	460	96	1.075	7	8	7	9
NY102	524	450	80	1.088	3	4	3	4
B0257-12	466	440	94	1.089	5	6	6	7
AF1614-2	469	438	93	1.084	5	7	7	8
NY84	471	435	93	1.068	6	9	8	8
B0564-6	442	413	93	1.080	-	-	-	-
AF1657-3	454	405	89	1.084	6	8	7	9
NY98	439	404	92	1.076	4	6	4	6
NYE11-45	444	404	91	1.067	4	6	5	8
B0892-7 [§]	424	401	95	1.093	5	6	6	8
B0178-30	441	399	91	1.092	-	-	-	-
B0174-16	425	398	93	1.100	7	7	6	7
B0176-24	432	394	91	1.094	-	-	-	-
B0564-8	432	384	89	1.087	5	6	6	7
AF1570-1	424	384	91	1.065	7	7	7	8
B1022-8	431	383	89	1.079	-	-	-	-
AF1609-1	447	383	86	1.074	7	7	7	8
AF875-15	406	382	94	1.091	6	7	6	7
B1027-6	412	372	91	1.091	6	6	6	7
B1032-3	442	370	84	1.091	6	7	6	8
B0587-9	393	370	94	1.086	-	-	-	-
AF1612-8	430	369	86	1.073	8	8	8	8
B0763-15	415	366	89	1.088	4	5	5	6
ND2471-8	430	364	84	1.087	6	7	6	8
B0613-2	418	360	86	1.073	-	-	-	-
B0172-22	425	360	86	1.083	-	-	-	-
AF1455-20	388	357	92	1.087	6	6	6	7
NY87	396	356	90	1.077	4	6	5	6
B0178-34	415	355	86	1.096	5	6	6	6
AF1569-3	399	354	89	1.082	7	8	7	8
NY103	381	351	92	1.080	5	6	5	7
M28-2	386	340	94	1.079	6	7	6	8
B0753-9	377	348	92	1.091	-	-	-	-
W870	369	342	93	1.096	4	5	4	6
M19-4	376	329	88	1.075	4	5	4	6
NY105	355	324	91	1.085	4	5	4	6
NY99	350	323	92	1.077	5	6	6	6
B1046-2	430	321	75	1.082	4	6	6	6
B0894-15 [§]	340	315	93	1.085	-	-	-	-
M19-3	338	310	92	1.072	4	6	5	8
AF1377-6	344	309	90	1.081	7	7	7	8
M14-6	363	309	85	1.087	6	6	5	7
B0257-9	326	307	94	1.087	-	-	-	-
B0564-9	343	304	89	1.082	6	8	6	6

Pennsylvania Table 1. Continued

Cultivar	Yield (cwt/A)			Specific Gravity	ChipColor			
	Total	US #1	%US #1		Dec ¹	Jan ²	Feb ³	Feb ⁴
B0585-5	366	302	83	1.084	5	5	5	5
B0813-7 [§]	360	301	84	1.107	-	-	-	-
B0717-1	345	297	86	1.084	5	7	5	8
AF1668-60	328	291	89	1.086	3	5	4	6
NYE55-35	347	290	83	1.089	4	5	5	7
AF1668-13	337	287	85	1.080	3	4	6	6
B1169-4 [§]	320	281	88	1.069	-	-	-	-
NYE55-44	301	278	92	1.087	3	4	4	5
B0956-4 [§]	311	273	88	1.080	-	-	-	-
ND2008-2	318	272	86	1.072	3	4	4	5
B1022-13	324	266	82	1.098	-	-	-	-
B0766-3	304	265	87	1.086	4	4	4	6
B0944-16SG [§]	363	262	72	1.090	-	-	-	-
AF1568-6	353	261	74	1.090	5	7	6	7
M32-7	293	257	89	1.077	6	5	5	6
AF1556-3	306	247	80	1.080	4	6	6	8
AF1593-1	271	224	82	1.091	6	8	7	8
NY95	279	207	74	1.094	4	6	5	6
M39-4	231	191	83	1.093	4	4	5	6
NY106	199	152	77	1.078	3	5	4	6
AF1568-11	165	147	88	1.080	6	8	7	9
<u>Reds and Purples</u>								
Norland	318	292	92	1.066	-	-	-	-
Chieftain	404	369	92	1.068	-	-	-	-
N51-1	531	506	95	1.071	-	-	-	-
NY97	482	430	89	1.066	-	-	-	-
B0811-13 [§]	420	389	93	1.077	-	-	-	-
N51-2	383	369	97	1.085	-	-	-	-
B0616-1	381	341	90	1.075	-	-	-	-
MN13035	381	331	87	1.077	-	-	-	-
B1177-1	343	321	94	1.069	-	-	-	-
N38-5	321	302	94	1.081	-	-	-	-
B0800-12	338	296	87	1.076	-	-	-	-
B0985-7	362	274	76	1.068	-	-	-	-
B0852-5	555	509	92	1.071	-	-	-	-
B0852-7	428	409	95	1.078	-	-	-	-
B0903-2	443	402	91	1.075	-	-	-	-
<u>Russets</u>								
Russet Norkotah	485	415	86	1.070	-	-	-	-
ND1995-1	495	442	89	1.072	-	-	-	-
B1014-5 [§]	465	417	90	1.086	-	-	-	-
B0863-9	402	372	92	1.080	-	-	-	-
B0835-11	382	340	89	1.080	-	-	-	-
B9922-11	368	321	87	1.081	-	-	-	-
B0455-27	373	298	79	1.076	-	-	-	-
AF1639-5	284	147	52	1.073	-	-	-	-
LSD (p = 0.05)	82	85	8					

¹ Stored at 55 F from November 7 and chipped on December 8, 1994.

² Stored at 45 F from November 25 then transferred to 55 F three weeks prior to chipping on January 31, 1995.

³ Stored at 45 F from November 25 then transferred to 55 F six weeks prior to chipping on February 24, 1995.

Pennsylvania Table 1. Continued

⁴ Stored at 45 F from November 25 and chipped on January 25, 1995.

Chip color is based on a 1-10 scale with 1 = lightest, 10 = darkest, and 1-5 = acceptable chip color.

§ = Yellow flesh

Texas

J. Creighton Miller, Jr. and Douglas G. Smallwood

Variety Development and Testing

Seedling Program. Approximately 48,937 first-year seedlings, representing 265 families, were grown for selection near Springlake in 1994, and 251 original selections were made from this material. The 1994, first-year seedlings from Texas resulted from crosses made at the Texas Agricultural Experiment Station near Lubbock. The remainder were provided by Joe Pavsek, Idaho (12,202), Bryce Farnsworth, North Dakota (10,356), David Holm, Colorado (7,233) and Kathleen Haynes, Beltsville, Maryland (7,401). The Texas program provided second, third and fourth size seedling tubers to these programs.

Adaptation Trials. The 1994 growing season was marked by above average temperatures in late May, June and early July. In general, vine growth was above average for the entire season. The variety and advanced selection trials at Springlake were planted on March 25 and harvested on August 15. Sixteen russet varieties or advanced selections were tested for their adaptability to Texas conditions (Table 1). The outstanding entries based on total yield and general rating were ATX84706-2Ru (Colorado and Idaho seed sources), TX1385-12Ru, TX1229-2Ru, Century Russet (Nebraska seed source), and ATX84378-1Ru (Idaho seed source) and TXAV657-27. Tubers of TXAV657-27 were of uniform size and shape. The selection ATX 84378-1Ru continues to show promise as a new variety for Texas and Eastern New Mexico because of its count carton potential, heavy netting and resistance to skinning. The entry ATX84706-2Ru produced a high percentage of U.S. No. 1 grade potatoes and its average weight was significantly greater than all other entries, including TX1229-2Ru and ATX84378-1Ru which also produced very large tubers. This selection also merits consideration as a potential new variety for Texas. The performance of Russet Norkotah was extremely poor.

The outstanding red varieties and advanced selections were Red LaSoda, Viking, Sangre 14, NDTX9-1068-11R and NDTX8-731-1R (Table 2). The selections ND1871-3R and COTX86146-2R also show promise as new varieties. Those entries with 70% or more U.S. No. 1's included NDTX9-1068-11R, NDTX 8-731-1R, Viking and COTX86146-2R.

The check variety, Atlantic, was the outstanding chipping entry, while Yukon Gold was the outstanding yellow flesh entry based on total yield and general rating (Table 3). Atlantic significantly

outyielded all other entries in total yield. Other entries deserving mention based on general rating include ATX85404-8W and Chipeta. Specific gravity of ATX85404-8W was comparable to the check variety Atlantic, but average tuber size was smaller than both Atlantic and Chipeta. Granola demonstrated extreme susceptibility to heat and water stress and produced many small chain tubers.

The strip trials consisted of twelve varieties or strain selections and fourteen promising advanced selections for which sufficient seed was available for strip planting of 200 foot rows. Strip trials more closely duplicate grower conditions and represent a more advanced phase of testing than replicated variety trials. Six randomly selected plots of each entry were harvested. The outstanding russet entries based on total yield and general rating were TX1229-2Ru, ATX84706-2Ru, TX1385-12Ru, TXAV657-27 and ATX84378-1Ru (Table 4). The advanced selections ATX84378-1Ru, ATX84706-2Ru and TX1229-2Ru produced significantly more over 18 ounce grade potatoes than other entries. The previously mentioned selections, along with TX1385-12Ru, also produced significantly more 10-18 ounce grade potatoes and higher average tuber weight than all other entries. The selection ATX84378-1Ru produces very uniformly shaped oblong tubers with a heavy russet skin; however, it can develop growth cracks and hollow heart when tubers are allowed to become very large. ATX84706-2Ru produces oblong tubers with a light russet skin, and appears to be somewhat resistant to second growth. TX1385-12Ru produces very smooth, oblong tubers which have a light russet skin. The selection TXAV657-27 produced uniform size tubers, but they were significantly smaller than those of the four selections previously mentioned. Ranger Russet, Century Russet and TXND329-1Ru produced a significantly higher yield of under 4 oz. tubers. Norgold "M" and NDO 2904-7 exhibited the most tuber rot, which could account for the low number of tubers per plant.

The outstanding entries based on overall general rating in the red strip trial were Red LaSoda, NDTX8-731-1R, NDTX9-1068-11R, ND1871-3R, COTX86146-2R and NDO2438-6R (Table 5). All of these advanced selections produced tubers which have a darker red color than the check varieties. ND1871-3R produced significantly more under 4 oz tubers, which might indicate potential for specialty/creamer packs. NDTX8-731-1R, NDTX9-1068-11R, COTX86146-2R and Viking produced a significantly greater number of large tubers (10-18 oz). NDTX9-1068-11R was later in maturity than all other red entries.

The white strip trial consisted of 2 yellow flesh, and 2 white chipping varieties and one white chipping advanced selection (Table 6). The outstanding entries based on total yield and general rating were Chipeta, ATX85404-8W and Yukon Gold. The specific gravity of all entries was low compared to previous years. The yellow flesh entry, Granola, produced a very high yield of under 4 oz. tubers, and average tuber weight was significantly lower than all other entries. This was due to its apparent extreme susceptibility to heat and moisture stress which resulted in multiple sets and chain tubers. Chipeta was very late maturing and also exhibited multiple sets. It is apparent that Yukon Gold can be successfully grown in Texas, because it is early maturing and resistant to heat stress.

Eighteen Texas Russet Norkotah strain selections were compared to regular Russet Norkotah at Hooper, Colorado (Table 7). This trial was planted on May 17 and harvested on September 23. The outstanding entries were TXN5278, TXNS112, TXNS296, TXN5282 and TXN5223. The results obtained at Hooper were consistent with previous strain trials regarding outstanding entries and the fact that all strains, with the exception of one, ranked higher than regular Russet Norkotah. While several non-replicated trials have been conducted since 1990, this is the fourth replicated trial of the strains that we have conducted over the past two years. Clearly, there are several outstanding Russet Norkotah strains that significantly outyielded regular Russet Norkotah. We are definitely making progress in identifying the 2 or 3 outstanding strains from the 400 that were selected initially.

Texas Table 1. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 16 russet potato varieties or advanced selections grown near Springlake, Texas - 1994.

Variety or Selection	U.S. No. 1 CWT/A				Average		General		
	TOTAL				Tuber		Rating		
	YIELD CWT/A	Total Yield	10-18 oz.	Weight in oz.	Specific Gravity	Tuber Type	Skin Type	1/	
ATX84706-2Ru (CO)	514.4	507.3	272.3	12.1	1.084	Oblong	Russet	4.5	
TX1385-12Ru	464.1	395.9	137.8	6.0	1.070	Oblong	Russet	4.0	
Century Russet (NE)	430.2	360.2	104.7	5.5	1.081	Long	Russet	3.8	
TX1229-2Ru	421.6	407.5	184.7	9.8	1.080	Oblong	Russet	4.0	
ATX84706-2RU (ID)	397.0	390.7	228.7	11.2	1.078	Oblong	Russet	4.5	
Century Russet (NE)	397.0	327.4	44.7	5.1	1.079	Long	Russet	3.8	
ATX84378-1Ru (ID)	366.9	347.5	153.1	9.0	1.064	Oblong	Russet	3.8	
TXAV657-27	335.2	293.5	80.8	5.9	1.059	Oblong	Russet	3.8	
ATX84378-1Ru (CO)	293.9	277.1	147.5	9.1	1.076	Oblong	Russet	4.0	
NDO2904-7	292.4	257.4	64.1	6.4	1.056	Long	Russet	3.5	
ATX84378-1Ru (CO)	290.5	278.6	130.0	8.4	1.074	Oblong	Russet	3.8	
CO85026-4	286.8	236.5	45.8	5.4	1.069	Long	Russet	3.0	
Ranger Russet	257.7	165.0	3.7	3.1	1.059	Long	Russet	2.0	
Norgold "M"	194.1	136.7	25.3	4.2	1.052	Oblong	Russet	2.5	
TXND329-1Ru	185.1	138.2	0.0	4.2	1.059	Long	Russet	3.0	
Goldrush	184.7	128.5	15.6	4.0	1.085	Oblong	Russet	2.5	
TX1216-1Ru	162.0	101.7	0.0	4.3	1.055	Oblong	Russet	2.8	
TX1523	138.6	53.6	0.0	3.2	1.065	Oblong	Russet	2.8	
ND2007-8Ru	83.4	53.3	0.0	3.7	1.073	Oblong	Russet	1.8	
Russet Norkotah	73.0	41.0	0.0	4.0	1.066	Oblong	Russet	2.5	
Average	288.4	244.9	81.9	6.2	1.069			3.3	
L.S.D. (.05)	124.6	119.7	65.0	1.6					

1/ 1 = very poor to 5 = excellent

Texas Table 2. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 15 red potato varieties or advanced selections grown near Springlake, Texas - 1994.

Variety or Selection	U.S. No. 1 CWT/A			Average		Skin Type	General Rating 1/	
	TOTAL	Tuber		Specific Gravity	Tuber Type			
	YIELD CWT/A	Total Yield	10-18 oz.					Weight in oz.
Red LaSoda	392.2	241.4	20.7	4.4	1.050	Oblong	Red	3.0
NDTX9-1068-11R	386.6	325.2	85.5	6.0	1.080	Oblong	Red	3.8
NDTX8-731-1R (NE)	356.5	253.6	38.6	5.3	1.062	Oblong	Red	4.0
Viking	339.7	293.3	77.1	6.3	1.072	Oblong	Red	3.5
Sangre 14	334.1	135.8	10.1	3.5	1.062	Oblong	Red	2.8
NDTX8-731-1R (CO)	329.6	253.6	48.6	5.0	1.079	Round	Red	3.8
ND1871-3R	292.2	145.3	0.0	3.8	1.065	Oblong	Red	2.8
LaRouge	291.6	182.7	35.2	4.8	1.064	Oblong	Red	3.5
COTX86146-2R	268.2	233.0	114.0	6.6	1.047	Oblong	Red	3.0
LA72-14	250.9	93.3	0.0	3.3	1.079	Oblong	Red	1.0
LA72-11	235.2	66.5	0.0	3.3	1.051	Oblong	Red	2.5
NDO2438-6R	234.7	158.7	49.7	5.1	1.080	Round	Red	2.0
LA72-13	231.9	78.8	0.0	3.2	1.055	Oblong	Red	1.8
Dark Red Norland	219.0	133.0	0.0	4.5	1.078	Oblong	Red	2.5
Fontenot	206.7	108.9	0.0	3.6	1.055	Oblong	Red	2.5
ND2224-5R	171.5	103.9	0.0	4.0	1.050	Oblong	Red	3.0
Average	283.8	175.4	30.0	4.5	1.069			2.8
L.S.D. (.05)	98.1	59.2	43.1	0.8				

1/ 1 = very poor to 5 = excellent

Texas Table 3. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 5 white and yellow flesh potato varieties or advanced selections grown near Springlake, Texas - 1994.

Variety or Selection	TOTAL YIELD CWT/A	U.S. No. 1 CWT/A		Average		General Rating		
				Tuber				
		Total Yield	10-18 oz.	Weight in oz.	Specific Gravity		Tuber Type	Skin Type
Atlantic	404.5	274.5	9.7	5.4	1.076	Round	White	4.0
ATX85404-8W	312.9	178.8	0.0	3.3	1.077	Round	White	3.5
Yukon Gold	218.6	133.7	0.0	4.7	1.063	Oblong	White	4.0
Chipeta	176.5	126.6	0.0	5.3	1.052	Oblong	White	4.0
Granola	173.2	5.6	0.0	1.3	1.048	Oblong	White	1.0
Average	257.2	143.8	1.9	4.0	1.063			3.3
L.S.D. (.05)	56.6	40.1	14.1	1.4				

1/ 1 = very poor to 5 = excellent

Texas Table 4. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 13 russet potato varieties or advanced selections grown in a strip trial near Springlake, Texas - 1994.

Variety or Selection	U.S. No. 1 CWT/A				Average				
	TOTAL		Tuber		Tuber				
	YIELD CWT/A	Total Yield	10-18 oz.	Weight in oz.	Specific Gravity	Tuber Type	Skin Type	General Rating 1/	
TX1229-2Ru	509.3	485.1	245.8	9.4	1.062	Oblong	Russet	4.0	
ATX84706-2Ru	494.1	472.8	216.0	9.6	1.063	Oblong	Russet	4.0	
TX1385-12Ru	412.9	376.2	139.3	7.8	1.064	Oblong	Russet	3.7	
TXAV657-27	389.4	317.0	38.2	5.1	1.060	Oblong	Russet	3.8	
ATX84378-1Ru	357.8	332.1	152.2	10.3	1.057	Oblong	Russet	3.8	
Ranger Russet	292.8	124.6	0.9	3.3	1.069	Long	Russet	3.0	
Century Russet	291.3	179.2	20.1	4.0	1.069	Long	Russet	3.2	
TXND329-1Ru	257.9	155.3	14.2	4.4	1.052	Long	Russet	3.0	
TX1216-1Ru	217.5	161.7	10.1	4.5	1.054	Oblong	Russet	2.9	
Goldrush	212.7	131.7	8.2	4.6	1.061	Oblong	Russet	2.8	
Russet Norkotah	185.1	124.0	31.8	4.4	1.060	Oblong	Russet	3.5	
Norgold "M"	85.3	54.9	3.4	4.2	1.056	Oblong	Russet	2.5	
ND02904-7	81.8	68.0	10.6	6.0	1.060	Long	Russet	2.8	
Average	291.4	229.4	68.5	6.0	1.061				3.3
L.S.D. (.05)	89.4	83.7	44.7	1.1					

1/ 1 = very poor to 5 = excellent

Texas Table 5. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 8 red potato varieties or advanced selections grown in a strip trial near Springlake, Texas - 1994.

Variety or Selection	TOTAL		U.S. No. 1 CWT/A		Average		Tuber		Specific Gravity		Tuber		Skin		General	
	YIELD		10-18		Weight		in oz.		Gravity		Type		Type		Rating	
	CWT/A	Yield	oz.	oz.	in oz.	in oz.	in oz.	in oz.	Gravity	Gravity	Type	Type	Type	Type	1/	1/
Red LaSoda	287.0	205.2	8.9	8.9	4.1	4.1	4.1	4.1	1.053	1.053	Oblong	Oblong	Red	Red	3.8	3.8
NDTX8-731-1R	250.5	224.8	44.3	44.3	6.0	6.0	6.0	6.0	1.052	1.052	Round	Round	Red	Red	3.5	3.5
NDTX9-1068-11R	244.3	205.4	45.8	45.8	5.8	5.8	5.8	5.8	1.057	1.057	Oblong	Oblong	Red	Red	4.0	4.0
ND1871-3R	237.4	134.5	0.0	0.0	3.3	3.3	3.3	3.3	1.050	1.050	Oblong	Oblong	Red	Red	3.8	3.8
COTX86146-2R	219.4	182.1	47.7	47.7	5.3	5.3	5.3	5.3	1.052	1.052	Oblong	Oblong	Red	Red	4.0	4.0
Fontenot	203.6	103.2	0.0	0.0	3.6	3.6	3.6	3.6	1.062	1.062	Oblong	Oblong	Red	Red	2.8	2.8
ND02438-6R	176.5	106.3	3.0	3.0	3.8	3.8	3.8	3.8	1.042	1.042	Round	Round	Red	Red	3.5	3.5
Viking	126.8	107.1	22.0	22.0	5.7	5.7	5.7	5.7	1.055	1.055	Oblong	Oblong	Red	Red	3.0	3.0
Average	218.2	158.6	21.5	21.5	4.7	4.7	4.7	4.7	1.053	1.053					3.6	3.6
L.S.D. (.05)	78.3	67.0	27.5	27.5	0.8	0.8	0.8	0.8								

1/ 1 = very poor to 5 = excellent

Texas Table 6. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 5 white and yellow flesh potato varieties or advanced selections grown in a strip trial near Springlake, Texas - 1994.

Variety or Selection	TOTAL		U.S. No. 1 CWT/A		Average					General Rating 1/
	YIELD CWT/A	10-18 oz.	Total Yield	10-18 oz.	Tuber Weight in oz.	Specific Gravity	Tuber Type	Skin Type		
Chipeta	376.9	80.1	313.6	80.1	5.6	1.051	Oblong	White		3.5
Atlantic	329.4	10.1	210.4	10.1	4.6	1.063	Round	White		3.5
ATX85404-8W	262.2	5.8	153.8	5.8	4.1	1.057	Oblong	White		4.0
Granola	252.5	0.0	50.8	0.0	1.8	1.047	Oblong	White		2.0
Yukon Gold	234.8	29.2	187.4	29.2	5.4	1.059	Oblong	White		3.5
Average	291.2	25.0	183.2	25.0	4.3	1.055				3.3
L.S.D. (.05)	82.5	20.8	62.7	20.8	0.8					

1/ 1 = very poor to 5 = excellent

Texas Table 7. Total yield, yield of U.S. No. 1 potatoes, average tuber weight, specific gravity, tuber type, skin type and general rating of 18 Russet Norkotah strain selections, as well as Russet Norkotah, grown near Hooper, Colorado - 1994.

Variety or Selection	U.S. No. 1 CWT/A				Average		General		
	TOTAL		Tuber		Tuber		Skin	Rating	I/
	YIELD	Yield	10-18	Weight	Specific	Type			
	CWT/A	oz.	in oz.	Gravity	Type	Type	Type	Type	Type
TXNS 410	317.1	294.4	106.5	6.4	1.093	Long	Russet	Russet	4.0
TXNS 278	309.0	272.2	68.8	5.7	1.083	Long	Russet	Russet	4.5
TXNS 551	283.9	256.4	99.0	5.7	1.090	Long	Russet	Russet	3.5
TXNS 112	278.2	242.0	75.7	5.2	1.085	Long	Russet	Russet	4.5
TXNS 296	274.3	248.3	91.8	6.4	1.093	Long	Russet	Russet	4.5
TXNS 507	269.9	245.0	60.7	5.7	1.091	Long	Russet	Russet	3.5
TXNS 282	264.5	224.1	65.2	4.8	1.078	Long	Russet	Russet	4.5
TXNS 223	258.8	213.3	80.8	6.0	1.075	Long	Russet	Russet	4.5
TXNS 106	254.0	215.4	76.3	5.6	1.087	Long	Russet	Russet	4.0
TXNS 134	253.4	202.2	55.6	4.8	1.097	Long	Russet	Russet	4.0
TXNS 102	251.3	225.9	76.9	5.1	1.092	Long	Russet	Russet	4.0
TXNS 399	250.4	212.4	55.0	4.9	1.090	Long	Russet	Russet	3.5
TXNS 446	247.1	90.4	5.4	2.8	1.092	Oblong	Russet	Russet	3.5
TXNS 344	233.4	173.8	13.2	4.4	1.077	Oblong	Russet	Russet	4.0
TXNS 118	225.9	195.4	47.3	5.0	1.092	Long	Russet	Russet	4.0
Russet Norkotah	217.8	180.7	43.4	4.6	1.080	Oblong	Russet	Russet	2.8
TXNS 325	212.7	175.6	47.3	5.5	1.094	Long	Russet	Russet	3.5
TXNS 249	200.7	181.3	36.2	5.3	1.091	Long	Russet	Russet	3.5
TXNS 439	173.5	146.6	25.1	4.8	1.090	Oblong	Russet	Russet	2.8
Average	251.4	210.3	59.5	5.2	1.088				3.8
L.S.D. (.05)	55.1	59.2	40.3	1.0					
1/ 1 = very poor to 5 = excellent									

Virginia

S. B. Sterrett

Introduction

Trials were conducted at the Eastern Shore Agricultural Research and Extension Center in Painter, Virginia. Since potatoes are grown commercially for both fresh market and chip stock in this area, these trials evaluate promising clones for yield, tuber quality and appearance, vine and tuber maturity, processing (chip) potential and freedom from internal and external defects.

Methods

Round-white trials were planted on April 6 and russeted clones on April 7 in single row plots on a Bojac sandy loam soil. Plots were 25 feet in length with 36 inches between rows and 12 inches between seedpieces except the red trial which was planted 8 inches between seedpieces. Trials were planted using a randomized complete block statistical design with four replications. Fertilizer included 100 lbs N, 43.7 lbs P, and 83 lbs K/A banded at planting. Linuron (0.4 lbs ai/A) and metolachlor (1.5 lbs ai/A) were applied at drag-off on April 22. Irrigation was applied in one inch increments on June 14 and July 22. Round-white and red-skinned trials were harvested on July 11 and the russeted trial was harvested on July 12. Specific gravity was determined by the weight-in-air/weight-in-water method. Chip samples were held at ambient temperatures and chipped 4 and 9 days after harvest. Chip color evaluations were provided by Wise Foods, Berwick, Pa.

Seasonal Observations

Planting was delayed by cold, wet weather in March. Continuation of cool, wet conditions after planting resulted in slow, staggered emergence of Colorado Potato Beetles that were difficult to control. High temperatures and poor air quality in late June and July resulted in early vine maturity and defoliation, particularly for clones sensitive to air pollution injury. Both tuber yield and specific gravity were lower in 1994 than 1993 and were consistent with commercial production this year.

Results

Round-white Trial. Marketable yield of Brodick, B0613-2, B0996-1, and B1016-3 was significantly greater than Superior (Table 1). All of these clones had acceptable tuber appearance (Table 6), but the extreme sensitivity of Brodick to internal heat necrosis (IHN) and susceptibility of B0996-1 to scab (*Streptomyces* spp) would preclude production of these varieties in this area. Clones with exceptional tuber appearance and yield equal to or greater than Superior were AF1475-16, B0613-2, and B1017-7.

Chip Trial. The marketable yield of several clones was similar to that of Atlantic (Table 2). Of these, B0178-34, B0564-8, B0564-9, B0585-5 and B0856-4, also had attractive tubers with no internal or external defects. However, only B0178-34 had sufficient specific gravity and adequate chip color for chip stock.

Red-skinned Trial. Several varieties/clones were completely defoliated as a result of air pollution injury when foliar ratings were taken on June 24. More tuber rot was also noted in this trial. Only the yield of Chieftain was similar to that of the standard Red Pontiac (Table 3). Fontenot, Red La Soda and Viking had attractive tubers, and moderate yield, with Fontenot having darker skin color. The clone DT6063-IR had attractive tubers with bright red skin and the largest percentage of tubers less than 2.88 inches in diameter. Growth cracks were a problem in Erik and Viking.

Late Chip Trial. This study was harvested 11 days later than the main-season chip trial to address grower needs for full-season chipping varieties. Yields were similar for all varieties (Table 4). Chip samples of Atlantic, Suncrisp, NY87, and NYE55-44 were lighter than the standard (Snowden) while specific gravity of Atlantic and Suncrisp equalled Snowden. Heat sprouting was a problem with Kennebec and IHN continued to be a problem with Brodick.

Russet Trial. The historical problem of finding a clone with smooth, attractive tubers and adequate yield of tubers weighing more than 8 oz continues. Of the varieties/clones in this study, Goldrush and

B1004-8 had the most attractive tubers with at least some tubers greater than 8 oz. Although B0493-8 had the greatest yield, tubers were rough and quite irregular in shape. Heat sprouting was a significant problem with B0880-15, B1121-15 and Russet Burbank.

Grower Trials. St Johns and AF875-15 were each grown in small-scale grower trials (10 cwt/grower) in three separate locations, using Snowden as the standard. In all locations, yield of St. Johns was less than Snowden and growers did not show much enthusiasm for St Johns as a late, fresh market variety. AF875-15 compared favorably with Snowden and Atlantic in two of the three locations.

Ratings

Vine and tuber ratings were completed using the rating system of the U. S. Department of Agriculture regional project NE107. For vine ratings, maturity: 1 = senesced, 9 = totally green; air pollution: 1 = defoliated, 9 = no visible symptoms. For tuber ratings, shape: 1 = round, 5 = oblong, 9 = very long (cylindrical); appearance: 1 = very poor, 9 = excellent; skin maturity: 1 = totally peeled during harvest and grading, 9 = skin intact, and tuber defects: 1 = severe, 9 = none. Ratings of heat necrosis were made on 20 tubers in the size range 2-1/2" to 3-1/4".

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Virginia Table 1. Yield, marketable yield, percentage of yield by grade size distribution, specific gravity, and chip color of advanced round-white trial grown for 96 days at Painter, Virginia, 1994.

Clone ¹	Yield		Marketable Yield		Size Distribution ²				Specific Gravity ³	Chip Color ⁴ (Days After Harvest)	
	> 1-1/2"	cwt/A	cwt/A	Percentage of std.	1	2	3	4		4	9
Atlantic	250	222	222	105	10	17	67	5	1.070	4	5
Brodick	315	252	252	119	19	24	53	3	1.057	7	8
Dundrod	246	183	183	86	22	24	48	2	1.065	-	-
Superior (std)	254	212	212	100	15	21	60	2	1.064	-	-
AF1475-16	264	242	242	114	8	16	74	1	1.063	-	-
AF1527-3	186	150	150	71	17	23	55	1	1.065	-	-
AF1569-2	277	237	237	112	13	19	62	5	1.062	-	-
AF1606-2	305	264	264	125	12	21	62	4	1.065	5	6
AF1657-3	281	219	219	103	18	18	57	3	1.070	-	-
AF1675-1	223	189	189	89	15	24	59	1	1.070	-	-
BO613-2	340	286	286	135	14	17	57	10	1.068	6	8
BO717-1	288	214	214	101	25	31	43	0	1.068	-	-
BO850-8	216	164	164	77	24	35	41	0	1.062	-	-
BO919-5SG	200	158	158	75	20	29	48	3	1.063	-	-
BO996-1	295	253	253	119	12	14	62	10	1.069	-	-
B1016-3	292	256	256	121	11	18	63	7	1.063	-	-
B1017-7	263	216	216	102	15	25	57	0	1.064	9	9
B1036-6	250	162	162	76	34	40	25	0	1.069	-	-
B1121-6	202	78	78	34	60	32	6	0	1.076	-	-
B1126-7	152	38	38	18	72	22	3	0	1.067	-	-
Waller-Duncan											
LSD (k=100)	35	36	36								

¹Planted April 6, harvested July 11, 1994.

²Size distribution: 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = > 3.25".

³Determined by weight in air/weight in water method.

⁴Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 2. Yield, marketable yield, percentage of yield by grade size distribution, specific gravity, and chip color of chip trial grown for 96 days at Painter, Virginia, 1994.

Clone ¹	Yield ≥ 1-1/2" cwt/A	Marketable Yield		Size Distribution ²				Specific Gravity ³	Chip Color ⁴ (Days After Harvest)	
		cwt/A	Percentage of std.	1	2	3	4		4	9
Atlantic (std)	298	272	100	9	15	67	9	1.069	3	3
Shurchip	260	197	72	25	31	44	0	1.053	6	8
Suncrisp	362	319	117	12	17	67	4	1.068	5	5
Superior	234	201	74	10	25	63	2	1.058	-	-
AF1668-62	156	87	32	45	37	18	0	1.060	3	3
BO176-24	287	254	93	11	14	62	13	1.062	5	6
BO178-34	292	255	94	12	17	63	7	1.068	3	5
BO257-12	236	206	76	12	24	62	0	1.061	6	5
BO564-8	336	286	105	13	14	61	10	1.064	5	5
BO564-9	313	290	107	7	9	49	35	1.062	4	4
BO585-5	312	288	106	6	9	64	20	1.064	5	5
BO587-9	254	223	82	10	20	63	5	1.066	7	6
BO763-15	264	233	86	11	14	68	6	1.068	-	-
BO766-3	283	251	92	11	16	64	9	1.059	3	3
BO856-4	406	374	138	7	9	53	30	1.057	-	-
B1022-8	237	209	77	11	20	68	1	1.055	3	3
B1032-3	240	218	80	9	11	61	19	1.062	2	8
B1158-4	160	132	49	17	22	58	1	1.057	5	6
B1191-2	327	272	100	16	23	56	4	1.058	5	4
NY98	239	186	68	20	24	53	1	1.055	6	5
NY99	191	147	54	21	26	49	2	1.054	5	7
NY101	241	202	74	14	25	59	1	1.056	3	6
NY102	197	151	56	23	24	52	1	1.065	5	4
NY103	236	199	73	12	22	60	3	1.057	5	3

Waller-Duncan
LSD (k=100)

43 40

¹Planted April 6, harvested July 11, 1994.

²Size distribution: 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³Determined by weight in air/weight in water method.

⁴Unreplicated samples: 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 3. Yield, marketable yield, percentage of yield by grade size distribution and specific gravity of red trial grown for 96 days at Painter, Virginia, 1994.

Clone ¹	Yield		Marketable Yield		Size Distribution ²				Specific Gravity ³
	$\geq 1\frac{1}{2}$ "	cwt/A	cwt/A	Percentage of std.	1	2	3	4	
Chieftain	394		290	97	26	28	46	0	1.053
Dk Red Norland	206		54	18	74	23	2	0	1.054
Erik	200		109	36	46	36	16	0	1.049
Fontenot	250		203	68	23	27	48	2	1.069
La Rouge	212		160	54	25	26	46	1	1.057
Red Cloud	148		108	36	29	27	43	0	1.056
Red La Soda	242		183	61	24	31	45	0	1.058
Red Pontiac (std)	385		299	100	22	22	52	3	1.053
Red Ruby	222		134	45	38	38	22	0	1.048
Reddale	357		326	109	11	23	54	12	1.054
Rideau	223		166	56	26	29	44	0	1.059
Viking	263		215	72	17	23	58	1	1.061
B0616-1	260		160	54	39	30	30	0	1.053
DT6063-IR	235		107	36	53	36	10	0	1.068
NY97	188		128	43	31	31	36	1	1.051
Waller Duncan									
LSD (K=100)	69		67						

¹Planted April 6, harvested July 11, 1994.

²Size distribution: 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³Determined by weight in air/weight in water method.

Virginia Table 4. Yield, marketable yield, percentage of yield by grade size distribution, specific gravity, and chip color of late chip trial grown for 105 days at Painter, Virginia, 1994.

Clone ¹	Yield > 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)				Specific Gravity ³	Chip Color ⁴
		cwt/A	Percentage of std.	1	2	3	4		
Atlantic	265	206	108	12	17	53	8	1.069	3
Brodick	249	184	97	18	23	46	5	1.056	-
Katahdin	249	180	95	20	19	50	3	1.057	6
Kennebec	314	246	129	16	17	60	2	1.060	6
Snowden (std)	268	190	100	23	29	41	1	1.068	4
St. Johns	262	209	110	12	22	56	2	1.055	4
Suncrisp	256	189	99	13	14	57	2	1.069	3
Yukon Gold	236	174	92	14	18	50	5	1.066	8
NY87	260	203	107	16	26	49	3	1.062	3
NYE55-44	275	185	97	28	36	32	0	1.064	2
Waller-Duncan									
LSD (k=100)	75	75							

¹Planted April 7, harvested July 21, 1994.

²Size distribution: 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

³Determined by weight in air/weight in water method.

⁴Unreplicated samples chipped 4 days after harvest; 1-4 = acceptable, 5 = marginal, 6 or greater = unacceptable.

Virginia Table 5. Yield, marketable yield, percentage of yield by grade size distribution and specific gravity of russet trial grown for 97 days at Painter, Virginia, 1994.

Clone ¹	Yield > 1-1/2" cwt/A	Marketable Yield		Size Distribution ² by class (%)					Specific Gravity ³
		cwt/A	Percentage of std.	1	2	3	4	5	
BelRus (std)	138	65	100	53	45	1	0	0	1.070
Goldrush	302	208	320	29	54	14	1	0	1.070
Russet Burbank	301	149	229	43	45	4	0	0	1.064
AF1481-4	180	86	132	48	48	0	0	0	1.060
AF1639-5	153	86	132	43	53	2	0	0	1.061
AF1643-10	171	111	171	33	51	12	1	0	1.068
AF1644-1	285	217	334	20	57	17	2	0	1.049
B9922-11	133	103	158	24	69	6	0	0	1.059
BO169-56	203	119	183	42	54	3	0	0	1.076
BO493-8	238	187	288	11	47	23	9	1	1.066
BO835-11	204	150	231	25	57	14	2	0	1.064
BO863-9	266	177	272	32	57	9	0	0	1.069
BO880-15	182	119	183	26	51	13	0	0	1.065
BO944-16	209	136	209	37	48	14	0	0	1.063
B1004-8	268	196	302	25	59	14	0	0	1.063
B1006-5	163	96	148	38	53	4	0	0	1.072
B1121-15	316	246	378	16	40	27	11	3	1.064
B1144-13	224	167	257	22	57	18	1	0	1.060
Waller Duncan									
LSD (k=100)	52	42							

¹Planted April 6, harvested July 12, 1994.

²Size distribution: 1 = 2-4 oz; 2 = 4-8 oz; 3 = 8-12 oz; 4 = 12-16 oz; 5 = > 16 oz.

³Determined by weight in air/weight in water method.

Virginia Table 6. Plant and tuber characteristics and tuber defects for round-white, red-skinned, and russeted clones grown at Painter, Virginia, 1994.

	Vine ¹		Tuber			Tuber Defects ²						
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Heat Sprout	Sun- Burn	Second Growth	Growth Crack	Heat Necrosis		
										Tubers	Rating	
Advanced Round White Trial												
Atlantic	7	8	2	6	6	9	9	9	9	2	7	
Brodick	7	9	4	6	7	9	9	9	9	11	4	
Dundrod	7	7	3	6	6	9	9	9	9	0	9	
Superior	5	7	3	6	8	9	9	9	9	0	9	
AF1475-16	3	-	4	7	6	9	9	9	9	0	9	
AF1527-3	4	-	3	7	6	9	9	9	9	0	9	
AF1569-2	4	-	3	7	6	9	9	9	9	0	9	
AF1606-2	7	9	3	8	7	9	9	9	9	0	9	
AF1657-3	7	8	4	7	5	9	9	8	9	0	9	
AF1675-1	7	9	3	6	6	9	9	9	9	0	9	
BO613-2	9	9	2	6	6	9	9	9	9	0	9	
BO717-1	7	7	3	6	6	9	9	9	9	2	6	
BO850-8	6	9	3	6	8	9	9	9	9	0	9	
BO919-5SG	4	9	2	6	5	9	9	9	9	0	9	
BO996-1	7	7	4	7	7	9	9	9	9	0	9	
B1016-3	6	9	3	7	7	9	9	9	7	0	9	
B1017-7	9	9	3	7	6	9	9	9	9	0	9	
B1036-6	7	9	3	5	8	9	9	9	9	3	7	
B1121-6	6	8	6	6	8	9	9	9	9	0	9	
B1126-7	5	9	6	7	8	9	9	9	9	0	9	

Chip Trial

Virginia Table 6. (continued)

	Vine ¹		Tuber			Tuber Defects ²					Heat Necrosis	
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Heat Sprout	Sun-Burn	Second Growth	Growth Crack	# of Tubers	Rating	
NY101	6	8	3	8	8	9	9	9	9	0	9	
NY102	7	8	2	5	7	9	9	9	9	1	8	
NY103	7	8	7	8	8	9	9	8	9	0	9	
Chieftain	7	-	3	7	7	6	9	9	9	1	7	
Dk Red Norland	1	4	2	7	8	9	9	9	9	0	9	
Erik	5	-	3	6	6	9	9	9	6	0	9	
Fontenot	7	-	2	7	7	9	9	9	9	0	9	
La Rouge	6	-	3	6	8	9	9	9	9	0	9	
Red Cloud	5	-	2	7	8	9	9	9	9	0	9	
Red LaSoda	6	-	3	7	7	9	9	9	9	0	9	
Red Pontiac	7	7	3	5	6	8	9	9	9	0	9	
Red Ruby	6	8	3	5	6	9	9	9	9	0	9	
Reddale	6	7	3	6	7	9	9	9	8	0	9	
Rideau	6	7	3	6	6	9	9	9	9	0	9	
Viking	7	8	3	8	6	9	9	9	9	0	9	
B0616-1	6	-	2	6	6	9	9	9	7	0	9	
DT 6063-IR	7	8	3	7	6	9	9	8	8	0	9	
NY97	5	-	4	6	6	9	9	9	9	0	9	
BelRus	7	8	6	7	7	Russet					9	
Goldrush	7	9	7	7	6	9	9	9	9	0	9	
Russet Burbank	9	9	7	2	2	6	9	2	9	0	9	

Virginia Table 6. (continued)

	Vine ¹		Tuber			Tuber Defects ²					Heat Necrosis	
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Heat Sprout	Sun- Burn	Second Growth	Growth Crack	# of Tubers	Rating	
AF1481-4	6	7	7	6	3	9	9	9	9	2	8	
AF1639-5	1	-	7	7	7	9	9	9	9	0	9	
AF1643-10	5	8	6	5	5	9	9	9	7	3	8	
AF1644-1	7	7	7	6	6	9	9	9	9	1	8	
B9922-11	5	5	6	7	8	9	9	9	9	0	9	
B0169-56	6	8	6	7	7	9	9	9	9	0	9	
B0493-8	7	9	6	5	5	9	9	9	9	0	9	
B0835-11	8	9	6	7	6	9	9	9	9	0	9	
B0863-9	8	6	7	7	6	9	9	9	9	0	9	
B0880-15	6	7	6	7	4	5	9	9	9	0	9	
B0944-15SG	7	8	7	6	5	9	9	9	9	0	9	
B1004-8	8	8	6	7	5	9	9	9	9	0	9	
B1006-5	7	9	5	5	5	9	9	9	9	1	7	
B1144-13	6	7	6	6	4	7	9	9	8	1	8	
B1121-15	9	9	6	5	6	6	9	9	9	0	9	
Atlantic	6	8	2	7	8	9	9	9	9	0	9	
Brodick	9	7	5	5	7	9	9	9	9	13	6	
Katahdin	6	7	3	6	8	9	9	9	9	0	9	
Kennebec	8	8	4	6	6	6	9	9	9	0	9	
Snowden	5	6	3	6	7	9	9	9	9	0	9	
St. Johns	6	9	3	6	8	9	9	9	7	0	9	
Suncrisp	8	9	4	6	6	9	9	9	9	0	9	

Late Chip Trial

Virginia Table 6. (continued)

Vine ¹		Tuber Defects ²					Heat Necrosis			
Maturity	Air	Tuber			Heat Sprout	Sun- Burn	Second Growth	Growth Crack	# of Tubers	Rating
	Pollution	Shape	Appear.	Skin Matur.						
6	9		3	8	8	9	9	9	0	9
7	8		2	8	8	9	9	9	0	9
NYE55-44										
NY87										

¹Vine ratings taken 79 days after planting.

²Twenty tubers sampled.

